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ABSTRACT

This report presents the results of a study of how emerging technologies can help educators deliver standards-based education to K-12 students. The first section of the report provides background on the new technology offerings and defines smart desktop systems. The second section lists critical questions for decisionmakers related to general policy, implementation issues, and vendor selection. The third section describes the components of a smart desktop system, including tools for standards, pedagogy/learning activities, resources, assessment and evaluation of student learning, professional development, classroom management, home-school connection, productivity, teacher education, local and global community, and grant writing. The fourth section describes vendor offerings in three categories: education portals/content providers; instruction/curriculum frameworks; and software manufacturers. The fifth section summarizes findings of an online survey of chief state school officers and organizations that provide smart desktop products/services related to audience, curriculum and teaching standards, instructional support, assessment of students, assessment of educators, professional development focus, professional development approach, access and reporting levels, data analysis, performance comparisons, World Wide Web-posted progress reports, Web-based delivery, implementation challenges, implementation-technical support, implementation challenges, teacher productivity tools, pricing models, hardware, and online tools. Tables of survey data, a copy of the questionnaire, a list of surveyed vendors, and scenarios of smart desktop applications are included. (MES)

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Smart Desktops for Teachers

Prepared by Robert M. Palaich, Dixie Griffin Good, Connie Stout and Emily Vickery
October 2000

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Executive Summary

The Education Commission of the States (ECS) decided earlier this year to address the question of how emerging technologies can help educators deliver standards-based education to K-12 students. ECS undertook three different research activities, the combination of which serve as the foundation of this report.

ECS first issued a Request for Information (RFI), in June 2000, which attempted to gauge the level and types of activities relating to "smart desktop" applications for teachers. The RFI was sent to two groups: (1) chief state school officers and (2) for profit and nonprofit organizations that provide smart desktop products and services. A more exhaustive survey of the field is intended in the future. Forty-four respondents completed the on-line survey.

ECS then invited a select group of more than 30 policymakers, educators and vendors to a meeting in July. The purpose of the meeting was to convene shapers, influencers and end users of smart desktop systems to identify issues and share perspectives. Participants heard from panelists representing three perspectives: teachers, policymakers and state representatives engaged in forging a smart desktop framework. Participants then discussed how technology could help teachers align standards with curriculum, instruction, assessment and productivity tools.

Participants recommended that ECS and the states consider several items when addressing how states, districts and schools might make optimal use of emerging technologies to enhance teacher performance and student achievement:

1. Change state adoption policies. State policies for adopting instructional materials can be ill-suited for fast-changing technology products. Vendors who respond to a state RFP will often have created several new versions of the product by the time an administrative decision is made, resulting in a situation where teachers are unable to use updated correlations to standards because the material is too dated.
2. Adopt new ways of thinking about education. State policies must extend beyond teachers and classrooms to a learner-centric approach tied to standards, benchmarks and performance. Policymakers should also consider more flexible approaches to financing.
3. Share intellectual capital. Education policymakers and administrators should make use of research available from various organizations when developing smart desktop guidelines and applications. Moreover, such research and information needs to be shared widely if it is to achieve the cross-fertilization desired.
4. Use the Web as a vehicle for disseminating information. ECS should make the Smart Desktops for Teachers study available on the Web provide a forum for sharing ideas and information on this topic

and report on district and state agency activities. In addition, participants were encouraged to testify before the Web-Based Commission via e-mail.

Finally, ECS asked members of its staff to conduct independent research on the subject. The independent research was then joined with the information gathered from the survey and meeting to produce the following report.

The report addresses a number of issues. The section titled "Teachers Using Technology" provides background on the new technology offerings and discusses various policy implications. The section titled "Survey of Vendor Offerings" summarizes findings of the survey of vendors. The section titled "Ideal Smart Desktop" outlines how emerging technologies may best be used to enhance teaching and learning. Scenarios, respectively titled "Mrs. Chavez ..." and "Mr. Brady..." provide descriptions of smart desktop technology applications. The section titled "Conclusion" not only identifies state activity, but anticipates future developments.

Teachers Using Technology

A new generation of products and services aims to integrate technology into the core elements of teaching and learning. These "smart" tools, computer software applications that can be customized for personal use, can automate tasks, build on existing applications, provide a repository of often-used resources, combine data from multiple sources into a central database and uniquely reconfigure data from multiple sources to meet individual user needs.

This new technology promises to transform education through tools organized on "smart desktops" for teachers. Businesses operating in the private sector have long used smart tools to manage and analyze information, make decisions, share knowledge, avoid redundancy, and train staff; but it is only recently that such Web-based tools have been made available to teachers. Teachers can now use electronic grade books, diagnostic testing and prescriptive instruction to monitor and modify student progress. They cannot only store, share and modify lesson plans and resources, but also capitalize on techniques for quickly interpreting data and modifying teaching strategies. Such technology – whether it is based on a system providing a single function or a system designed to provide a fully-integrated environment, which anticipates user questions – promises to close the accountability loop between standards, classroom practice and testing.

Smart Desktops Defined

A smart desktop is best defined as a Web-based environment, through and in which teachers can:

- Find instructional resources correlated to standards
- Create, customize or access lesson plans juried by their peers
- Create syllabi and activity journals
- Communicate and collaborate with peers
- Store and retrieve information about individual students
- Get "just-in-time" training and professional development
- Conduct ongoing, diagnostic testing
- Use timely information to make school improvement decisions
- Exchange information with parents and students
- Use productivity tools, such as electronic grade books and calendars.

Smart desktop technology also suggests improved cost-efficiencies within education and across society. This technology allows teachers to combine their instructional repertory – curriculum, content, assessment, professional development, instructional tools and productivity tools – with student academic standards for as little as $4 per student per year. It also allows parents access to the system at any time of day from outside the school building, removing barriers for increased parental involvement.

Finally smart desktop technology offers new means for gathering and analyzing data within the classroom, throughout the school, across districts, around the state. Teachers can now ask previously unanswerable questions about what works to enhance student achievement. They can conduct high-stakes tests, analyze and distribute the results, and prescribe interventions to enhance student achievement in a timely manner. In short, smart desktop applications offer "real-time" means for teachers to assess and respond to student needs.

It is for these reasons that both education and marketplace forces have been influential in the development of smart desktop systems. Investors view technological developments in education as a great market opportunity. Merrill Lynch & Co. estimated the e-learning market for grades K-12 alone to be $1.3 billion in 1999, increasing to $6.9 billion by 2003. Smart desktop technologies, fueled by capital investments, have driven established and start-up companies alike to compete for a foothold in this marketplace.

And it is not only educators and businessmen who are interested in smart desktop applications. States and districts also are shaping smart desktop tools to enhance teaching and learning, in order to close the gaps between standards, testing and classroom practices. Some agencies have designed their own systems, contracting with vendors for needed components.

State policymakers and education administrators need to be cautious, however, when dealing with vendors of emerging technologies. There are often hidden costs that extend beyond development. These costs include purchasing software, expanding system capacity, initial implementation, ongoing support and staff development. Smart desktops also can pose new problems and raise new policy questions. The use of individual student data, assessment data and performance data raises concerns about privacy, information misuse and poor analysis of data. Education decisionmakers and implementation teams would do well to consider all of these issues and concerns early in the decisionmaking processes.

Critical Questions for Decisionmakers

State policymakers and education administrators face a complex task when attempting to bring smart desktop tools to educators within their states. The following questions serve as guideposts to help state policymakers and education administrators work through options as they read through this report and develop their own Smart Desktop applications and policies:

General Policy Questions

- What is the role for states: are they obliged to provide an overarching framework within which schools and districts can participate in order to meet standards, or are they merely to support independent development by schools and districts?
- With a number of private sector companies indicating their products are correlated to state and national standards, what oversight is and should be provided for correlation of standards?
- Should the emphasis be on student achievement, teacher productivity, or both?
- What kind of a system meets the role decided upon: a large statewide system, a more moderate districtwide system, or a school-specific program that addresses specific educator needs?
- What barriers will educators encounter through such a system?
- What incentives might be developed to promote desktop applications within the decided system?
- How will the project relate to or change other state or district technology infrastructure plans?
- Does the state have a responsibility to train educators in the proper analysis of data in order to make the best use of data for making decisions?
- Will educators be held accountable to new standards in the proficient use of technology for improved teaching and learning?
- Should states consider an adoption list for Web-based content providers, as many states require of textbook companies?

- Is the state, district or school willing to commit the revenues required to realize desktop applications cost (e.g., costs for a large district might exceed $1 million plus per year)?
- If larger school districts can afford such systems, ought not the state assist smaller or poorer districts in acquiring similar tools?
- If teachers make assignments and resources available to students and communicate with parents *via* the Web, should remedies for equity or equipment be available to those students who live in remote areas or have no access to the Internet outside of school?
- Will disparities in access increase the "digital divide"?
- What services should be provided to students?
- Who ought to provide them?
- Who ought to pay for them?
- What are the costs?
- What type of funding mechanism will be used?

Implementation Issues

- What level of financial commitment is needed to implement and maintain this effort?
- What infrastructure is required to support Internet access?
- What is the quality and speed of Internet access for educators, in both urban and rural areas?
- What are staff development and training needs?
- How will the new system make instruction better, faster and easier for teachers?
- Should incentives be provided for teacher participation?
- What provisions should be made for technical support, training and professional development?
- Does the system incorporate high-quality professional development modules for teachers available on demand (e.g., via text, video or a combination of both)?
- What programs are needed to facilitate user feedback and ensure that the system is bug-free and user friendly?
- Does the system provide the training to develop skills in data analysis?
- Does the system allow for assessments of teacher competency and content knowledge?
- Should there be a relationship to state assessment requirements?

Vendor Selection

- Is the quality of resources (lessons, materials, user interface) in keeping with the team's expectations and the agencies' other resources?
- Are the resources truly correlated to the standards? By what process?
- Is the system architecture truly an open one: i.e., can I use assessment questions or resources from a different vendor?
- How is the privacy of student records protected?
- What technical support is included? How are fees for additional support calculated?
- What role does the firm play in the roll-out or implementation phases?
- How do references rate the firm in terms of support and implementation; i.e., do they answer calls and requests promptly when "bugs" are encountered?
- What is the firm's reputation among education clients?
- What is the firm's track record and staying power in a competitive market?

Components of a Smart Desktop System

If the goal of building a teacher's toolbox is to improve student achievement, several components are necessary. Four of these components are identified as "cornerstones"; i.e., those elements most vital to enriching student learning. The cornerstones are Standards, Instructional Support, Assessment and Professional Development. Additional components include Access and Reporting Levels for various stakeholders, Data Collection and Analysis, Web-based Delivery, System Implementation and Teacher Productivity Tools. All are accessible as a smart desktop tool using current technology.

Table 1

Components and Definitions of a Smart Desktop

Note: ☐ = A cornerstone to higher student achievement

Component	Definition
Standards Database ☐ Local/District State National	The smart desktop system includes an on-line database of district, state and/or national standards. Ideally, the standards drive the development and delivery of other components.
Instructional Support ☐ Integrated Curriculum Strategies Learning Activities Lesson Plan Database/Templates Focused Tutoring/Assignment Management Research Database	The technology and software support an integrated approach to instructional delivery derived from the standards. It includes an on-line database of standards-correlated lesson plans. Teachers may direct assignments to students, including remedial or advanced variations depending on student needs. Teachers may access research-proven instructional strategies, examples of best practice and other research materials for on-demand training and development.
Assessment ☐ Creating Assessments Scoring Training/Guides Exemplary Student Work *Assessment Reports and Analysis* Curriculum-embedded assessment Stand-alone tests (state, entrance) Monitoring Progress On-line Assessment	Software guides teachers through the development of assessments to determine student mastery of material. Training for scoring performance-based or portfolio material is available, including examples of student work at multiple levels of mastery. Reports and analysis allow teachers to diagnose student strengths and weaknesses, prescribe learning activities and monitor progress. On-line assessments allow for rapid scoring and provide teachers with more time to analyze the results.
Professional Development ☐ On-line Course Email Web Collaboration Face-to-Face Video/Quick Time	Software and tools are available for training. Systems offer opportunities for educators to advance all areas of teaching competencies through on-line courses and refreshers, discussions and collaboration with colleagues, and shared lesson plans and resources, including video-based examples of best practice.

Component	Definition
Access and Reporting Levels Teachers School/District Officials Students Parents Community Members Preservice Teachers Teacher Educators	Educators, students and stakeholders have varying levels of access to tools, data and reports depending on need. Teachers may have access to such tools as an electronic gradebook, calendar, curriculum and content databases, etc. for the classroom. Students may be able to access assignments, works in progress, scores and resources anytime, anywhere Web tools are available. Principals may see schoolwide data and comparative data for the school and schools with similar demographic/SES profiles in the state. District administrators may see an aggregate of student information across schools. Parents may see the student's classroom assignments, test scores, absences, resources for home study, etc. Preservice teachers and colleges of education may have access to and training on the smart desktop system.
Data Collection and Analysis Data Analysis Data Mining/Data Warehousing Performance Comparisons Student Skill Inventory/Portfolios Web-posted Progress Reports	Comprehensive smart desktop solutions integrate student information systems with curriculum, instruction and assessment components. This allows for systematic data analysis and performance comparisons, data-based decisionmaking, and information sharing among all stakeholders in the educational effort.
Web-based Delivery Education Service Providers District- or State-Operated Systems	Districts and states may outsource all or portions of smart desktop systems to organizations that lease applications, thereby saving costs in equipment, software licenses and technical support. Alternatively, districts and states can run their own IT systems and seek outside providers for specific components. Most education agencies contract with vendors for at least part of the smart desktop system.
System Implementation Training and Professional Development Train the Trainer Self-paced Tutorial Face-to-Face Technical Support	A carefully planned implementation can determine the ultimate success or failure of any technology endeavor, especially one as powerful as a smart desktop system. Decisionmakers buying vendor products need to know specific training and support items included and the costs of additional consultations. Other implementation factors include additional staff training and troubleshooting, and teacher time to assimilate and adapt tools in productive, innovative ways of enhancing student achievement.
Teacher Productivity Tools Assessment Reports/Test Scores, Electronic Gradebook/Attendance Electronic Report Card Calendar Syllabus Creator	Smart desktops may provide a variety of productivity tools that teachers can use to manage, analyze and share information.

The Ideal Smart Desktop

If an individual were attempting to create an "ideal smart desktop" for teachers, he or she may consider building the system around the following components:

1. Standards. The system would provide Web-based links to local, district, state and national standards. The Workspace Toolbox would contain the standard specific to their grade and subject matter, so teachers would not have to "search" for the standard. "Common denominator" standards would eventually be developed and incorporated into the system, creating an "ease of use" across district and state lines while retaining the integrity of the learner outcomes.

2. Pedagogy/Learning Activities. The system would provide teachers direct links to standards-based "learning activities" and "teaching strategies." Embedded in the "learning activities" and "teaching strategies" would be considerations for best practices founded on brain-based learning. Theme-based units, project-based learning, inquiry-based learning, discovery learning and cooperative learning strategies also would be available for exploration and consideration. Each activity and strategy would ultimately be linked to research supporting its use. (Video "refreshers" and case studies also would be available.) A specialized subdivision of instructional strategies would integrate technology within classroom settings, as well as within distributed learning environments. Scenarios could include using one computer in a classroom, combining standards with technology integration, reaching into the home and community, and using technology to write journal entries or to record observations outdoors (e.g., with probes).

3. Resources. The system would integrate text, voice and videos of best practices in instructional delivery, classroom management and assessment practices. Other resources would encompass video, digital and printed materials that could be purchased directly on-line. Music, photos, virtual fieldtrips, virtual dissections, simulations and cyber-student collaboration projects also would be included. The Workspace Toolbox would include such standard pieces as on-line encyclopedias, dictionaries, museums and libraries. It also would include tips and techniques for integrating technology to meet learner outcomes, all of which would be complimented with video examples of successful practices ranging from the one-computer classroom to the use of mobile technologies. Resources also would be cross-referenced with those housed at the local, regional and state levels for teacher check-out. Specialized subdivisions of such resources would involve:

   - Meeting the needs of special children
   - Bilingual teaching strategies
   - Challenging the gifted learner
   - Content-specific strategies of integrating technology to meet learner outcomes
   - The teaching of reading in grades 5-12
   - Basic math skill-building strategies (aligned per standard and "learner activity").

Resources would be kept current to address emerging challenges and student needs as reflected in data-mining from the Smart Desktop.

4. Assessment and Evaluation of Student Learning. The system would provide assessment models, each of which would be correlated not only with a particular standard but with the "learning activities" and the "teaching strategies" to create a whole evaluation picture of a student's learning achievement archived over time that would extend from K-12 into postsecondary and other adult learning programs. (This component would include both lower-cognitive and performance-based assessment examples: e.g., on-line multiple-choice tests to digital performance-based portfolios). The system also should incorporate the following activities and components:

   - Interim testing would occur several times over the course of a year, in order to provide "prescriptive intervention" prior to end-of-the-year, high-stakes testing.
   - An integrated feedback loop, tied directly to tested state standards and any curriculum the school follows, would allow for accurate, ongoing, non-disruptive assessment of student and class progress. (This would return instructional time to the school day, freeing teachers and students from the anxiety generated by additional rounds of high-stakes testing.)
   - On-line portfolios, where students keep their work across grades and courses, would be included and accessible from anywhere using any browser.
   - Performance-based evaluation criteria would be included. (Teachers could establish categories defining what work is "proficient," "exemplary" and "needs improvement." This would allow teachers to access student examples of work paralleling each descriptor.)
   - Student achievement would be archived, allowing data-mining techniques to be used for making reports directly to the State Department of Education in accordance with accountability programs.

(The classroom could, figuratively and literally, be linked directly to the statehouse and provide timely information in policymaking initiatives to support student learning.)

- Student performance levels would be measured against a standards mastery (criterion-based).
- Student grades and test scores would be compared among classes within the school and district, as well as against interstate and international scores.
- Visuals would show teachers overall class performance per standard. The visual representation, as correlated with student achievement, could be accessed in order for teachers to re-teach, offer prescriptive tutoring if necessary, or provide more challenging coursework over the course of the entire year.

5. Professional Development. Professional development would be embedded within each component. These elements would include:

- On-line course delivery
- E-mail and Web-based collaboration (listservs, threaded discussion, etc.)
- Video streaming and Quicktime movies in providing models of best practice
- Face-to-face only
- Face-to-face coupled with virtual support systems
- Reflection and journal writing
- E-mentoring/peer coaching.

Reflection on practice would be pervasive in the process, with the Smart Desktop playing a pivotal role in "action research" undertaken by education professionals. Professional development would be data-driven and timely, as teachers would use the extensive information gained from the Smart Desktop. Teachers also would collaborate in curriculum planning in a virtual environment, using the same Smart Desktop space. Each teacher would be allowed to act independently or in conjunction with others in the manipulation of on-screen elements of the Smart Desktop from any location. (On-screen video conferencing could provide support when teachers choose to work as a virtual group.)

6. Classroom Management. Teachers would be able to post their course outline, assignment deadlines, testing dates and project parameters on-line. This allows students the ability to find the information they missed during an absence and the opportunity to collaborate on projects from anywhere in synchronistic and asynchronistic environments. Student work could easily be archived, allowing teachers to track individual and group progress.
7. Home-School Connection. Parents would be able to access a child's grades and on-line portfolio via the Web. Teachers and parents could exchange e-mail as well as communicate via video conference. Home-bound students could participate in class via video streaming or in asynchronistic environments. The result would be the creation of virtual Parent Centers, where information and resources are provided in helping parents learn more about how they can help their children meet learner outcomes. Teachers would be able to point to specific strategies and resources that parents could use, based on student skill inventory results. Thus, allowing teachers the ability to create digital curricula and deliver coursework on-line, while leveraging technology's strength and broadening public educational systems into home-school environments, especially after the development of "common denominator" standards.
8. Productivity Tools. Student information systems would be merged with cornerstones (curriculum, instruction, assessment and staff development), with all data being integrated and mined to create a coordinated means for submitting district and state reports. Such productivity tools would include:

- A digital gradebook would be furnished; however, links from the gradebook would show the student's on-line portfolio.
- Pre-test and post-test evaluation of a student's skill level would be provided. Interim testing occurs several times over the course of a year in order to provide "prescriptive intervention" prior to end-of-the-year, high-stakes testing.

- Prescriptive tutoring based on student skill inventories would be an integral component, possibly structured around a combination of computer-based and face-to-face tutoring.
- Web-based communication and collaboration components would be provided, including: threaded discussions, listservs, e-mail, across-district posting of activities and meetings, public or private across-district posting of meeting notes, and public or private chat rooms.
- On-line testing and writing instruments for students would be available, with "real time" results being readily available.
- Syllabus, newsletter and calendar creation would be available.

9. Teacher Education Programs. Schools of education faculty would integrate the use of Smart Desktops in a student's four-year program, with the Smart Desktop being aligned with the school of education's curricula. Pre-service teachers also would be able to work with their mentor teacher prior to classroom experience, thus providing hands-on interactions merging theory and practice.
10. Local and Global Community. Community members at-large would be able to access individual school profiles of student performance via Smart Desktop features, as well as interact with students and teachers through special "virtual" visits into classrooms and homes as guest speakers. Teachers would be able to cross-reference local organizations and needed services in preparing curriculum, possibly furthering the implementation of Community Service curriculums.
11. Grant Writing. Teachers and district personnel, using data available from the Smart Desktop, would better be able to determine student needs and thereby focus on specific grant opportunities. Data minded from the Smart Desktop could be included in the grant submission.

Caveats

The chief causes for concern over Web-based accountability tools are quality, costs and misuse or poor analysis of the data. Web-based systems that track student progress offer many benefits to teachers, administrators, students and parents, but the quality and usefulness of a smart desktop system can vary widely. Policymakers and administrators also must be concerned about differing district and state standards, disparate assessment tools used to measure student achievement against the benchmarks, imprecise correlation of resources and lesson plans to established standards, and vendors who claim that their product is aligned to standards when in fact both the product and standards have changed. Finally, though the cost per student for the software or resource package may be reasonable, the information infrastructure, training and support for a complex information system are costly to develop, implement and maintain.

Vendor Offerings

State policymakers and education administrators – having reviewed various policy, implementation and vendor questions – will out of necessity turn to vendors in hopes of finding products that meet their respective needs. This section looks at select products currently on the market, or expected to be available within the year. (Briefs on companies offering these products in included in Appendix A.) Tables at the end of the section provide a cross-referenced summary of vendor offerings.

Product offerings described below are divided into three categories:

- Education Portals/Content Providers
- Instruction/Curriculum Frameworks
- Software Manufacturers.

Education Portals/Content Providers

1. America On-line - AOL (http://www.school.aol.com). America On-line's AOL@School is a complete on-line education resource for schools. Specific features are directed at students based on grade level (primary, elementary, middle school, high school), teachers and administrators

2. Apple Learning Interchange (http://www.ali.com). Apple Learning Interchange is a free on-line community for educators. It offers an extensive database of resources, units of practice and a QuickTime TV for Learning section with demos, best practices and presentations, and a forum for collaborating and discussing ideas with colleagues. It also provides a standards correlation engine for locating curriculum units aligned with major state and national standards.

3. AT&T's Learning Network (http://www.att.com/learningnetwork/). Learning Network is an education portal. It provides resources for educators and families, including lesson plans, on-line projects, teaching aids, government sites, articles written by education experts, professional development resources, funding resources and Internet safety. It also offers Cable in Education Resources (http://wir.com/cable/) to support the use of cable services and programming in the classroom, Resources for Librarians (library.html), Diversity Resources (diversity.html) and E-Rate Resources (erate.html). AT&T's Virtual Academy (http://www.att.com/learningnetwork/virtualacademy) provides teachers with on-line professional development resources, ranging from free courses to update skills, to fee-based, college credit courses provided through AT&T's collaboration with Penn State University's World Campus and T.H.E. Institute.

4. bigchalk.com: The Education Network (http://www.bigchalk.com). Bigchalk.com offers both a National Community Web site and Local Community Web sites. Its product offerings include customizable reference, research, content and curriculum services. School Web Sites can be used to post assignments, calendars, news and facilitate collaboration. The company's Electric Library and ProQuest are subscription-based research and reference services for K-12 educators and public libraries. In addition, bigchalk.com offers on-line testing, diagnostic information, instruction and related feedback, and professional development services.

5. Cable in the Classroom (http://www.cicon-line.org). Cable in the Classroom is a consortium of over 8,500 local cable companies and 41 national cable networks, covering approximately 77% of America's K-12 schools, which has invested an average of $2 million per week for the past 10 years in an effort to improve education in America. It provides "free" cable connections and more than 540 hours per month of commercial-free educational programming, covering all disciplines and issues. There are no viewing requirements. Teachers use their discretion regarding program choice and use. Students also can use the cable connection to access the information superhighway.

6. California Instructional Technology Clearinghouse – CITC (http://clrn.org). CITC is an educator's guide to quality instructional technology resources that support California's curriculum frameworks and standards. The database of more than 3,700 recommendations can be searched by descriptive criteria or content standards.

7. Chancery Software (http://www.chancery.com). Chancery offers K12Planet.com (http://www.k12.planet.com), a school and home community portal, in addition to its student information systems. It brings parents, students, teachers and administrators into the same information loop, using information updated daily from Win School and Mac School student information systems. Student information is available only to authorized users by password.

8. eChalk (http://www.echalk.com/). eChalk is an Application Service Provider (ASP) that offers Web-based communication tools for the K-12 market. It provides schools with their own homepages, e-mail, public and private calendars, teacher Web pages, on-line address books, data sharing capability, file storage and alumni services. eChalk is the first ASP to earn eligibility for federal e-rate funding. eChalk uses two systems: (1) the eChalk District system that connects all members within your district office, and (2) the eChalk School System that connects students, parents and teachers. eChalk maintains all back end systems. The only technology requirements for schools are computers with Internet browsers and Internet connections.

9. Edventions, Inc. (http://www.edventions.com). Starship School, a product offering of Edventions Inc., is a comprehensive Internet software package designed for the K-12 education market. (See description under Curriculum/Instructional Frameworks below.)

10. The Gateway (http://www.thegateway.org). The Gateway is a searchable database of lesson plans, curriculum units and education resources that will soon be searchable by standards.

11. iMind Education Systems (http://www.imind.com). iMind Education Systems is an education service provider (EduSP) that leases instructional management tools, educational resources and student data to schools. Teachers use the EduSP to create lessons and post assignments; students retrieve

assignments and digital resources; administrators obtain attendance and grades; and parents receive messages and progress reports. (All use a local server in the school, rather than a large server over the Internet.) iMind Integrator, a product offering of the EduSP, offers interactive, customizable lesson plans correlated to academic standards. Teachers can assign software titles that students can view and launch within their thin-client browser. IMind Tutor Pro, another product offering of the EduSP, provides an instant snapshot of students' skill levels and helps prepare a personalized education plan.

12. Knowledge Universe Internet Learning Group (http://www.knowledgeu.com). Knowledge Universe Internet Learning Group offers interactive education products, early childhood education, technology training and resources for teachers, and interactive learning Web sites for children and families. Knowledge Kids Network, Inc. (http://www.KidsEdge.com) provides a Web-based individualized learning system, and continual feedback and guidance for parents, with complementary sites for parents, grandparents and teachers. Teacher Universe (http://www.teacheruniverse.com) and Galaxy.org (http://www.galaxy.org) engages teachers and students in collaboration, research, inquiry and expressive activities. Teacher Universe provides instructional technology planning, professional development, instructional tools, yearlong curricula, and career and life services.
13. Lightspan.com (http://www.lightspan.com). Lightspan.com is a free education portal for educators, parents and students. It provides resources, research tools and grade-specific activities. The Lightspan Network (TLN), an on-line subscription service for schools, features K-8 curriculum aligned to state standards. It includes a search tool for finding lesson plans, learning activities and on-line curriculum correlated to specific state standards. There are no advertising or sponsorship banners, and customers have the option to customize TLN to district or state preferences.
14. SchoolTone Alliance (http://www.schooltone.com). SchoolTone Alliance is an education service provider (EduSP) that allows schools and universities to lease access to sophisticated computing applications (i.e., portals, electronic library, enrollment, discussions and testing) at a lower cost than buying, supporting or troubleshooting their own computer software and equipment. This model, also known as portal computing, features vendors collaborating to create Web-based portals that provide affordable and easily accessible Internet content, communication tools and applications for educators.
15. Teacher Universe (http://www.teacheruniverse.com/). Teacher Universe provides teachers with a forum for instructional technology planning, real time professional development, classroom instructional tools and product reviews of educational software and tools from various vendors, year-long curricula, additional research and grants resources, and career and life services. Teachers can choose to be part of a listserv to discuss issues and ideas with other teachers, find collaborators for projects, and receive updates about the latest happenings at Teacher Universe. Additionally, Teacher Universe provides teachers with the Technology Integration Assessment System aligned to ISTE/NCATE Standards for Basic Endorsement in Educational Computing and Technology Literacy.
16. Wwwrrr.com (http://www.wwwrrr.com). Wwwrrr.com is an education portal that offers some content, along with an on-line communication tool (wwwrrr@myschool) that allows teachers, parents, and students to share information and ideas. Schools also can create their own interactive Web sites to increase involvement.

Instruction/Curriculum Frameworks

1. Co-NECT (http://www.co-nect.net) Co-NECT is a comprehensive school reform model for grades K-12. It uses project-based learning, standards-based reform, instructional educational technology, on-line lessons and curriculum. The Co-NECT Exchange, an on-line application, offers integrated curriculum resources, a knowledge bank of best practices, on-line help, training modules and projects. It also connects educators across its U.S. network of schools through e-mail and discussion areas. Tools for teachers include a mechanism for building projects that are tied to local and national standards and a library of projects and plans. Web-based accountability tools, such as performance-based assessment, are forthcoming.
2. Carlton Solutions for Education (http://www.carltonse.com). Curriculum Assistant, a product offering of Carlton Solutions for Education, builds instructional plans that conform to district, state and national standards. On-line access is available at home or at school.

3. Center for Research on Evaluation, Standards and Student Testing at UCLA (CRESST) - CRESST (http://qsp.cse.ucla.edu/) Quality School Portfolio is a product of CRESST. (See description under Software category.)

4. Classroom Connect (http://www.classroom.net/home.asp). Classroom Connect offers a collection of Web-delivered, standards-based curriculum resources, activities and professional development programs for K-12 educators. Products include Classroom Today, Connected University and Quest Interactive Expeditions for students.

5. ComputerCurriculumCorporation(http://www.ccclearn.com).EdMap (http://www.ccclearn.com/tools/edmap/), a product of Computer Curriculum Corporation (a Pearson Education Company), combines curriculum planning software, lesson planning software, assessment tools and collaboration tools to provide an integrated approach to curriculum, instruction and assessment.

6. EDmin's Virtual Education System (http://www.edmin.com). EDmin's Virtual Education System is a suite of Internet-based software modules designed to manage and report student progress relative to standards. Data can be easily aggregated or disaggregated, and performance can be tracked at multiple levels. There are modules for curriculum, staff development, newsletters, calendars and school board communications. The Student Portfolio and Assessment System helps assess and improve academic performance and teaching methods. Its open architecture allows merging, managing and data-mining from a district's existing software applications and all content is controlled by the client Edmin is currently collaborating with ISTE, Compaq, and Microsoft. .

7. Edventions, Inc. (http://www.edventions.com). Starship School, a product offering of Edventions Inc., is a comprehensive Internet software package designed for the K-12 education market. It merges content material and applications in an interactive environment using 10 integrated components: an Internet Safety Manager, an Intranet-Communication Tools, a Home-School Connection, an Educational Content Creation Tool, On-line Lessons mapped to state and national MCREL standards, Teacher Training, a Student Administrative System, On-line Tutoring, Fund-Raising and Technical Support. The cost is less than $100 per year per teacher. Edventions, Inc. provides technical support and installation of a super-server. School must have a high-speed Internet connection and a Local Area Network (LAN).

8. EdVision (http://www.edvision.com). Tudor's Curriculum Designer software, a product of EdVision, generates curricula that meet district and state standards. It features an on-line database of state standards coupled with lesson plans and other resources.

9. The Gateway (http://www.thegateway.org). The Gateway is a searchable database of lesson plans, curriculum units and education resources that will soon be searchable by standards.

10. Homeroom (http://www.homeroom.com). Homeroom, a service of *The Princeton Review,* is an integrated suite of on-line services, print products and school-based professional development that allows schools to improve their performance on state-mandated assessments without disrupting the curriculum. Designed to work with each major textbook and learning program, Homeroom gives students, teachers, administrators and families up-to-the-minute feedback on a student's progress. It also minimizes, through integration with day-to-day classroom work, the amount of time teachers need to devote to test-preparation.

11. IBM (http://www.solutions.ibm.com/k12/learningvillage/welcome.html). Learning Village, a product of IBM, offers a Web-based calendar, on-line forums, school and home connections, an instructional planner and a home page designer. IBM's Wired for Learning offers tools to create curriculum, assess student work, and collaborate with colleagues.

12. LearnCity (http://www.learncity.com). LearnCity provides tools, resources and implementation guidance that gives teachers, students, administrators and parents the ability to support individual student achievement. LearnCity.com is a fully-integrated, Web-based system. The product offers a standards-based curriculum organizer, a collection of learning activities correlated to standards, assessments linked to standards and student achievement, an on-line student record management system, job-embedded learning and professional development, and systemswide communication capability.

13. LearningStation.com (http://www.learningstation.com). LearningStation is an education service provider (EduSP) offering curriculum planning, on-line classroom planning, productivity tools,

ExploraSource, e-library and more. Schools can lease desktop applications, including Office 2000, Cornerstone, Skillsbanks, Brainium and Boxer Learning. It also offers e-mail, calendar, address book and file storage for teachers, administrators, staff, students and parents.

14. Lightspan (http://www.lightspan.com). Achieve Now, a product of Lightspan, integrates curriculum, assessment, professional development and evaluation. (See listing under Education Portals/Content Providers.)

15. MediaSeek (http://www.mediaseek.com). MediaSeek builds products using patented technology, a core search engine, correlation services, data on education standards, instructional products and a software application interface. ExploraSource (http://www.explorasource.com) is a free service of MediaSeek, which allows users to search a database of K-12 resources by subject matter and level to locate books, Web sites, software, video tapes, audio cassettes and other learning materials from education publishers and content providers. Curriculum Orchestrator is a technology-based K-12 lesson planning environment, using tools to integrate standards, instructional materials and knowledge bases.

16. MCI Worldcom (http://www.wcom.com/marcopolo/). MarcoPolo, a product offering of MCI Worldcom, provides no-cost, standards-based Internet content for the K-12 teacher and classroom. On-line resources include panel-reviewed links to top sites in many disciplines, professionally developed lesson plans and classroom activities. Sites include materials to help with daily classroom planning, brief and extended lesson plans, reviewed and expert-approved links to related high-quality sites and search engines. Partners for content development include National Geographic Society, The Kennedy Center, American Association for the Advancement of Science, Council of Great City

17. NCS (http://k12.ncs.com/k12/xproducts/abacus.html). AbacusXP, a product of NCS, is a cross-platform, relational database that links curriculum to state and national content standards or graduation requirements. It has multiple modules, including curriculum, resources, test generation and scoring, and student mastery. It allows teachers to see how well students are learning and determine what changes need to occur in curriculum, instructional delivery, assessment and professional development. Abacus works with other NCS software programs, including MCAD. (See NCS under Software Manufacturers section below or at http://www.ncs.com).

18. NETSchools (http://www.netschools.com). NETSchools is moving into the Web portal arena, making available their academic database with state-correlated lesson plans and Web sites. They are partnering with a number of others to provide assessment tools, calendaring information, email and other resources for teachers.

19. Pearson PLC (http://www.pearson.com). Pearson PLC has a preliminary agreement with AOL to establish a company that would become the preferred supplier of educational content and on-line learning tools. This includes K-12 curriculum, parental involvement in schools, the development of technology tools and curriculum architecture. Pearson PLC and AOL also will provide an elementary school teacher portal that includes lesson planning software, teacher training materials and parental access. Pearson PLC has alliances with several on-line education companies, including Score! Learning Inc., Copernicus Education, Gateway and Blackboard Inc.

20. Riverdeep (http://www.riverdeep.net). Riverdeep's interactive learning solutions integrate curriculum resources with Web-based and CD-ROM solutions. Proprietary programs include Destination Math, Logal SimLibrary Science and Math, and EDVantage Language Arts. Students learn through interactive multimedia presentations, simulations, tool-based activities, multimedia and an on-line community. Teachers are provided with lesson plans, teaching guides and student handouts. They can correlate software to leading textbooks and state and national standards, and monitor student progress and performance through use of assessment tools, portfolios and account administration. Professional development programs and on-line collaboration opportunities are available.

21. SAS Institute Inc. (http://www.sasinschool.com) SAS in School™, a product of SAS Institute Inc., provides curriculum resources in English, science, mathematics, history and foreign languages. Its Web-based Curriculum Pathways™ offers access to lesson plans, teaching ideas and Web resources organized by discipline and linked to state and national standards.

22. Teachscape (http://www.teachscape.com). Teachscape is an application service provider (ASP) for school districts seeking to outsource their professional development needs. Teachers develop a profile based on the national teaching standards and curriculum standards. They are presented with video case studies that will meet their professional development needs. These video case studies are

supported by resource material, which include lesson plans (correlated to states), lesson preparation needs, research information, examples of student work and assessment information. Teachscape has partnerships with the AFT and SRI (Roy Pea). Teachscape is a Web-based and on-site delivery system that will present video cases where bandwidth is sufficient and send the video cases on CD-ROM where bandwidth is not sufficient.

Software Manufacturers

1. Advantage Learning Systems (http://www.advlearn.com). Advantage Learning Systems provides K–12 schools with computerized learning information systems (LIS): i.e., software and related training designed to improve academic performance by increasing the quality, quantity and timeliness of information in the classroom. Products include Accelerated Reader LIS for reading and literacy skills, STAR Reading computer-adaptive reading test and database, Accelerated Math management software, STAR Math computer-adaptive math test and database, and Perfect Copy writing skill development software.
2. Campus America (http://www.IMSeries.com). Campus America offers software for standards-driven decisions, plus tools to determine effectiveness of decisions. It also includes a calendar for lesson schedule and student performance profile reports.
3. CELT Corporation (http://www.celtcorp.com). CELT Corporation offers electronic decision support software applications that enable school administrators to use information in response to accountability challenges. It also offers consulting on technology procurement, technology audits, needs analysis, systems integration, management and support.
4. Center for Research on Evaluation, Standards and Student Testing at UCLA - CRESST (http://www.cse.ucla.edu). CRESST developed Quality School Portfolio (QSP) as an electronic tool for school decisionmakers. It assists decision makers in examining factors that can affect student achievement. It helps collect, understand and report on various aspects of school performance. It also offers resources for collecting data on curriculum and instruction, parent involvement, safety and security, and professional development. The database can accommodate norm referenced tests, descriptive variables and score types.
5. Edventions, Inc. (http://www.edventions.com). Starship School, a product of Edventions, Inc., offers a comprehensive Internet software package designed for the K-12 education market. (See description under Curriculum/Instructional Frameworks above.)
6. EdVISION.com (http://www.edvision.com/). EdVISION.com develops software tools for measuring and communicating student progress. It also generates curricula aligned to state and national standards. The product line includes Skills Connection, Grade Level Evaluation, Assessment Management System and Curriculum Designer.
7. Excelsior Software, Inc.– Pinnacle System (http://www.gradebook.com). Excelsior Software, Inc. offers a gradebook product that many schools have used for a number of years. The product is now available on the Web. As such, the company is able to work with districts to provide a means for teachers to access their gradebooks from home and school. Parents are able to dial into schools to see their student's grades.
8. IBM (http://www.solutions.ibm.com/k12/learningvillage). Learning Village, a product offering of IBM, offers a Web-based calendar, on-line forums, school and home connections, instructional planner and a home page designer. IBM's Wired for Learning provides tools to create curriculum, assess student work and collaborate with colleagues.
9. Lindy Enterprises, Inc. (http://www.heartbeeps.com) HeartBeeps, a product offering of Lindy Enterprises, Inc., is a curriculum-based skills assessment software correlated to key national and state standards such as the Texas Assessment of Academic Skills (TAAS), the Florida Comprehensive Assessment Test (FCAT) and the Iowa Test of Basic Skills (ITBS). It integrates computer technology with classroom curriculum in reading, writing, math, science and social studies in grades 2-6. Currently it is currently being used in over 3,000 schools. It is available in both site-licensed and single-user CD versions, in Spanish versions. It is both Macintosh and Windows compatible.

10. NCS (http://www.ncs.org) NCS offers Educational Structures (ES), which provides custom Internet curriculum. There are components for teachers, students and family. The teacher component includes lesson plans, teaching strategies, a custom lesson planner, teacher activity central, interdisciplinary thematic activities and correlations to state standards. ES is compatible with NCS AbacusXP and Model Curriculum and Assessment Database (MCAD). It is also compatible with other NCS products, including SASI and ParentCONNECT. Soon it will be offered via the Web.
11. PowerSchool (http://www.powerschool.com). PowerSchool is a Web-based student information system giving students, parents and educators real-time information, assessment tools and access to on-line educational resources.

Summary of Survey Findings

The Education Commission of the States issued a Request for Information (RFI) in June 2000 in order to gauge the level and types of activity in the area of providing "smart desktop" applications for teachers. The RFI was issued to chief state school officers in the United States and organizations (both for-profit and not-for-profit, identified by the team preparing this study) that provide smart desktop products and services. Being asked to participate in the RFI does not represent an endorsement on the part of ECS, nor does omission from this sample necessarily indicate any lack of quality on the part of providers. A more exhaustive survey of the field is recommended for the future.

Forty-four respondents completed the online survey. The respondents are divided into three categories: states (16 responses), vendors (25 responses) and nonprofits (3 responses). The state respondents and a majority of the private sector providers participating in the survey describe themselves as education portals: i.e., gateways through which teachers and other users can access resources and information from a variety of sources (Table 1a). Teachers are the target audience for most smart desktop respondents, followed by parents, then students.

More than 60% of vendors offering content provide correlations to state curriculum standards. In addition, the majority of private-sector providers correlate their site to either the ISTE Technology Standards for Educators or the state technology standards for educators. Many offer specific applications, such as on-line courses for students and educators, curriculum aligned to state and national standards, lesson plans and assessment instruments. A growing number of companies are offering Web-based instructional software and assignment management and monitoring capabilities. A few provide prescriptive tutoring to students and educators taking on-line courses. Most providers offer curriculum-embedded assessment. Some offer a means to develop student portfolios, either in print, on the Web, or both.

Nearly 60% of the respondents state that personnel demands – not technology – is the greatest implementation challenge. System capacity, Internet access and computer access are major implementation factors stated by 50% of the respondents. Bandwidth and staff time also pose challenges.

Only New Hampshire and Illinois indicate they offer on-line courses. North Carolina indicates that they offer access to a Student Information System on their state Web site. Maryland offers performance-based assessment, pre- and post-test, and prescriptive tutoring from their state Web site.

The following information summarizes survey findings by subject category:

1. Audience. Classroom teachers are the primary target of Smart Desktop applications providers (Table 2a-c). The next highest target audience category was parents. These applications and services recognize the importance of parent involvement, especially with education resources specifically focusing on student instruction. Only 50% of the Smart Desktop applications target the teacher-educator population. State departments of education viewed business partners, citizens, other state agencies and community members as audiences

   Eighty-three percent of private sector sites offer services for students. Not all sites have fees associated with them; but policymakers and administrators may well discover a source of funds to purchase services that do charge and that could be found in the more traditional textbook areas.
2. Curriculum and Teaching Standards. There is a move to correlate all resources with state curriculum standards. Many of the sites, especially nonprofit sites, have focused on National Curriculum standards (Table 3a-c). In the area of Teaching Standards, the majority of the resources on the

Teachers Desktop are correlated to the either the ISTE or State Technology Standards. The majority of states provide a database of their own state standards. Illinois has a requirement for any on-line provider with a state contract to provide the correlation to their standards. This is consistent with requirements in other states.

Correlation to state curriculum standards is an important feature of the Smart Desktop. To that end, more than 60% of the vendors currently provide correlations to state curriculum standards. These vendors strive to provide these correlations to all state curricula. This is done either by obtaining copies of the various state curriculum standards and having a team correlate their resources against the standards or by purchasing the service from a third party. Achieve/McRel provides these services to several providers, while Bigchalk's MediaSeek also provides a correlation service. It is clear that the goal of the private sector vendors who offers on-line curriculum is to obtain correlations for all states that have curriculum standards. NetSchools provides a service in which they will correlate the districts' resources (i.e., library holdings and etc.) as a value-added service at the clients' request.

The majority of the private sector vendors do correlate their site to either ISTE Technology Standards for Educators or a state's technology standards. Three of the respondents offer correlation to the National Board of Professional Teaching Standards. These respondents offer on-line courses to educators. Nonprofit providers do correlate to state and national standards. The MCI WorldCom foundation works with national organizations that provide the correlation to national standards. Of the nonprofit providers, only the EPIE Institute correlated their resources to Teaching Standards.

3. Instructional Support. Many of the applications focus on providing learning activities for use in the classroom (Table 4a-c). While the majority of sites offer lesson plans, some offer juried lesson plans or templates that have been peer reviewed. The California Learning Resource Network offers juried lesson plans correlated to the California learning standards. Web-based instructional software and assignment management and monitoring also is offered by a growing number of private-sector companies. A small number also provide prescriptive tutoring both to students and to educators taking an on-line course. The majority of the nonprofit respondents provide learning activities, pedagogy support and lesson plans. Only the EPIE Institute indicated they provide instructional software.

4. Assessment of Students. Assessment techniques vary (Table 5a-c). Some private sector companies offer assessment of students using their Web-based instructional software. Others offer a means to develop student portfolios, either in print, on the Web or both. A number of the private sector providers offer student on-line journals and an area for exemplary student work to be stored or displayed. The majority of vendors offer curriculum embedded assessment; fewer provide stand-alone test. A small number of the nonprofit responders indicated student assessment was part of their offerings. While several states indicated these items were not applicable to their services, some provide assessment reports on stand-alone test.

5. Assessment of Educators. Services vary with provider and the purpose for their sites (Table 6a-c). Most of the on-line sites offer assessment through technology systems. MCI WorldCom Foundation and the IBM Learning Village include an assessment strategy of peer review and jury process that adds to the base of peer-reviewed lesson plans and activities. Both course-embedded assessment and end-of-course assessment are the most commonly used assessment strategies, especially for those sites focusing on educator professional development. Classroom Connect, Teachscape and Teacher Universe use peer review to assess in course work. Classroom Connect, Edmin.com, NCS Teachscape and Turner Learning use on-line journals as an assessment tool. An increasing number of sites use assessments based on National Professional Standards.

6. Professional Development Focus. The major professional development thrust for the respondents is in the support of the individual on-line portal (Table 7a-c.) The next most frequent focus targets technology integration for educators. A few, however, are using the technology systems to provide for the professional development of educators. As access and need for alternative professional development continues, the growth of on-line systems will bring more options to the educators' Smart Desktop. Content areas receiving increasing attention are English/Language Arts, Mathematics, Science, and Social Studies. Brainium, Classroom Connect, NCS, NetSchools, Riverdeep, Teacher Universe and Teachscape are developing systems that offer a wide variety of professional development opportunities. Others, such as Intel, provide links to many professional development options.

7. Professional Development Approach. Professional development varies from on-site or face-to-face meetings to strictly on-line opportunities (Table 8a-c). Educators can, through these systems, use their Smart Desktop to take a course for "just-in-time learning" or to access course for graduate credit. Several systems use the video case study approach. EDmin, NCS, Oz New Media, Teachscape and the EPIE Institute work in this area. Lightspan and several of the ones listed above supplement the system with video case studies on CD-ROMs, in order to offset the concerns of low bandwidth. As these systems mature, the Smart Desktop will be able to provide educators with the ability to customize their learning to meet their individual and class needs. The integration of the Smart Desktop approach may, given the current professional development needs and teacher shortage, be a solution for a great need.

8. Access and Reporting Levels. The Smart Desktop provides the ability for more people to become involved in the reporting (Table 9 a-c). The private sector vendors provide reports not only for teachers and school district officials, but also for students and their parents. Excelsior software provides many school districts with an Electronic Grade Book. Teachers can input grades and teachers and students can access the information remotely, using their on-line system. This will increase the need for data security.

9. Data Analysis. The majority of the states offer data comparisons for their state data (Table 10a-c). The two Canadian companies responding to the survey indicated they provide International data comparisons. An interesting trend worth noting is that a number of the providers offer integration with state and local data warehouses. Chancery system, for example, permits all student information data to be reported, queried, analyzed and graphically presented using third-party reporting tools. The Smart Desktop will allow teachers to use data to drive instructional practice. A training issue that needs to be addressed concerns how educators and the community will use the data for decisionmaking.

10. Performance Comparisons. With the emphases on accountability and data warehousing, more companies provide tools and resources for conducting performance comparisons (Table 11a-c). Brainium, IBM, NCS, NetSchools, Oz New Media, Riverdeep and Teachscape provide performance comparisons of both local and state data. Chancery and Edmin.com also compare local data. None of the nonprofit organizations provide for performance comparisons. The majority of the states do, however, provide the resource to their educators.

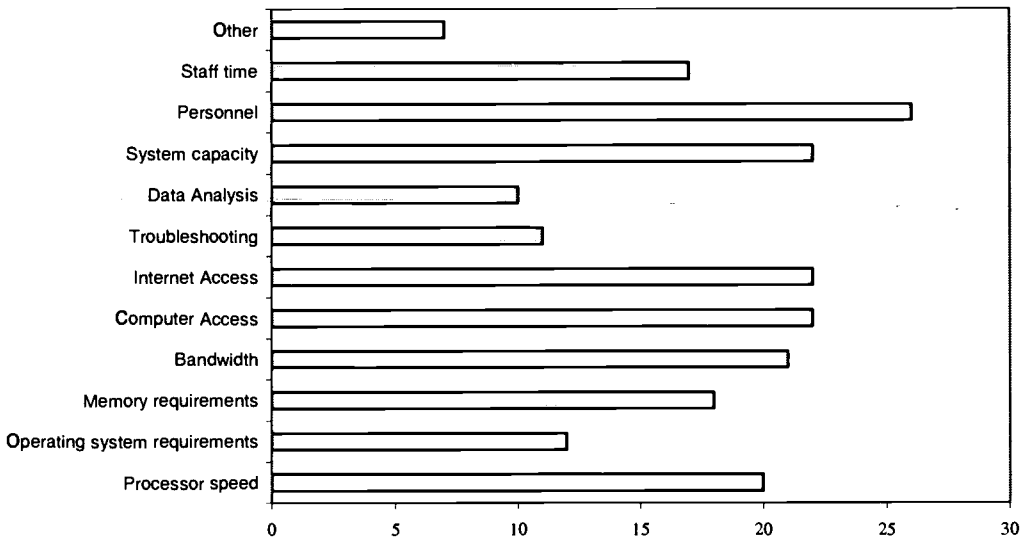
11. Web-posted Progress Reports. Edmin.com, like a number of the companies who responded, has the capability to produce progress reports on the Web (Table 12a-c). The posting of such progress reports are subject to the policies and procedures of each individual district, state or educational agency being served. Wwwrrr provides a system where each individual can see their own progress report and teachers can see student progress reports within their class tests. The EPIE Institute and MCI Worldcom Foundation are two of the nonprofit organizations that provide-Web-based progress reports. The Wisconsin Department of Public Instruction provide Web-posted progress reports.

12. Web-based Delivery. The development of applications to make the Smart Desktop a viable resource for educators varies across the board (Table 13). While the state departments of education respondents indicated the states should take the role in providing standards databases, the majority of the respondents felt it was the role of Education Service Providers (EduSP) to develop assessment tools. Some state respondents indicated the state should provide all these tools for educators. Considering the current initiatives in Virtual Education Space in Massachusetts and Washington, state departments of education provide the standards but look to the private sector to develop the systems.

13. Implementation Challenges. It is difficult developing a viable technology system for teachers, as free time and access to computers remains a challenge (Table 14). Costs associated with travel also make training on a remote system difficult. The most commonly used approach is a "Trainer of Trainers" system, supplemented by a number of on-line resources and frequently asked questions (FAQ). This strategy is often supported by face-to-face meetings. A smaller number of the systems provide "Self-Paced" tutorials. Project Achieve found "real time" virtual support to be helpful, while SRI finds that "real-time" on-line tutorials are helpful. Chancery uses computer-based training, while bigchalk.com uses the strategy of holding conference workshops for educators. The state departments of education, like the private-sector companies, use a combination of "train the trainer" and "face-to-face" meetings.

14. Implementation – Technical Support. Continual technical support of any on-line system is a challenge. On-site support is also costly, because of the distributed nature of these on-line systems. The most frequent means of delivering technical support is through FAQ documents, supplemented by discussion boards, ListServs and contact with a help desk through either an 800 number or a toll number. Only 45% of the respondents provided on-site technical personnel.

15. Implementation Challenges. Almost 60% of the respondents stated personnel demands – not technology – was the greatest implementation challenge (Table 16). About 50% stated that system capacity, computer access and Internet access were major factors to consider in implementation. This was followed closely by bandwidth and staff time. (Daily demands on educators frequently cut into the small amount of on-line time they had during the day. Several indicated that the best time to use the system was during the evening, but there was concern from educators that this would invade their personal time.) Other implementation challenges, especially for providers offering services to students, stem from the Children's Online Privacy Protection Act requirements. Security issues relating to on-line data collection also was seen as a concern. Finally, fear of organizational change, often associated with district employees resisting the use of applications that promote assessment and accountability, was cited as an implementation challenge.



16. Teacher Productivity Tools. Productivity tools varied with the focus of the site. Some sites focused on providing tools for all classroom needs; others focused on specific instructional resources. The most frequently seen tools are calendars, assessment reports and test scores. Electronic Gradebooks and Report Cards are reported as part of these systems (Table 17a-c). SRI noted that shared whiteboard, shared text documents, and Web page projection are very successful. AOL provides such tools as a calculator, an encyclopedia, a dictionary, a thesaurus and a search engine.

17. Pricing Models. State departments of education and nonprofit sites offer their services at no cost. SRI charges an annual fee to organizations. AOL, Intel and Turner Learning provide education portals that are free and contain no advertising. The most frequent pricing model (46% of the respondents) is based on a fee for either a district or campus license (Table 18). Several companies offer individual subscriptions to educators and parents. One site, EDmin.com offers a student subscription. Bigchalk.com permits advertising after school hours. Chancery's K12Planet is free to all their MacSchool and WinSchool customers on current Chancery Support Services. (It will be bundled with their SIS products for new customers.)

18. Hardware. Computer access was seen as a barrier to implementing the Smart Desktop for educators. While a multimedia personal computer can be used to bring the Smart Desktop technology to educators, 62% of the respondents indicated legacy computers with Thin Client software can be used for access (Table 19). There was an indication that Thin Client Network appliances and Wireless portable Internet devices have a role in schools. Fifty-two percent of the respondents indicated Thin Client Network appliances could access these on-line systems. This could indicate a trend toward a more diverse technology infrastructure in schools, which would contain a mix of multimedia computers and thin client devices. This may permit a more diverse system of computer devices that meet specific needs, as technology infrastructures are built into schools. Wireless portable Internet devices and Thin client network appliances may provide more access points, as they can be applied throughout the school.

19. On-line tools provided. Email, Listservs, and threaded discussion top the list of tools for the Smart Desktop (Table 20). More than 30% of the sites responded that they include chat, but only two (Oz New Media and the EPIE Institute) include the use of voice and video chat. Given bandwidth needs,

however, the extent to how voice and video chat will be deployed across many schools remains a question. AOL indicated they provide Instant Messenger services to educators. Project Achieve provides a "polysynchronous constructivist" virtual space and SRI provides educators with the use of multi-user virtual environment with Web interface, text chat, and object creation and manipulation. The continual development of new tools will increase, however, as bandwidth and Internet access also increases.

The following tables provide a cross-referenced summary of the survey findings:

Table 1A
On-line Offerings – Private Sector

Organization Name	Education Portal	On-line Courses/ Classes	State Correlated Curriculum	Lesson Plans Bank	Juried Lesson Plan Bank	Tradition Assessment	Student Instruct Software	Perform-based Assessment	Student Information Systems	Pre-test/ Post-test	Prescriptive Tutoring	Web Links	Other Media
AOL	X						X					X	
bigchalk.com	X												
Brainium.com		X	X	X		X	X	X	X	X		X	X
Cablevision	X		X	X	X							X	X
Chancery .	X								X	X		X	X
Classroom Connect	X	X	X	X			X	X				X	X
Co-nect		X	X		X							X	X
EDmin.com	X			X	X	X	X	X		X		X	X
Excelsior													
IBM	X	X	X	X	X	X		X				X	X
iMind	X		X	X		X				X		X	
Intel	X			X								X	
Learning Station	X	X	X	X		X	X	X	X	X			
Lightspan	X		X	X	X	X	X	X		X	X	X	X
Lindy Software			X										
NCS	X	X	X	X		X			X		X	X	X
NetSchools	X	X	X	X	X	X	X			X	X	X	X
Oz New Media	X	X	X	X		X	X	X				X	X
Riverdeep		X	X	X		X	X	X		X			X
SchoolCity.com	X	X		X	X	X							
Teacher Universe	X	X	X	X	X	X	X	X		X	X	X	

Organization Name	Education Portal	On-line Courses/ Classes	State Correlated Curriculum	Lesson Plans Bank	Juried Lesson Plan Bank	Tradition Assessment	Student Instruct Software	Perform-based Assessment	Student Information Systems	Pre-test/ Post-test	Prescriptive Tutoring	Web Links	Other Media
Teachscape		X	X										X
Turner Learning													X
wwwrrr, Inc.	X	X				X	X					X	X

Table 1b
On-line Offerings – Nonprofit Organizations

Organization Name	Education Portal	On-line Courses/ Classes	State Correlated Curriculum	Lesson Plans Bank	Juried Lesson Plan Bank	Tradition Assessment	Student Instruct Software	Perform.-based Assessment	Student Information Systems	Pre-test/ Post-test	Prescriptive Tutoring	Web Links	Other Media
EPIE Institute	X	X	X	X	X	X	X	X	X		X	X	X
MCI WorldCom Foundation	X	X			X							X	
Project Achieve		X						X			X	X	X
SRI Inter-national								X				X	

Table 1c
On-line Offerings – State Departments of Education

Organization Name	Education Portal	On-line Courses/ Classes	State Correlated Curriculum	Lesson Plans Bank	Juried Lesson Plan Bank	Tradition Assessment	Student Instruct Software	Performance-based Assessment	Student Information Systems	Pre-test/ Post-test	Prescriptive Tutoring	Web Links	Other Media
CA Learning Resource Network	X		X		X							X	X
Idaho Dept of Ed	X		X									X	X
Illinois State Board of Ed	X	X		X								X	X
Iowa Dept of Ed	X											X	
Kansas State Dept of Ed	X		X									X	X
Maine Dept of Ed	X		X	X								X	
Maryland State Dept of Ed	X			X				X		X	X	X	X
Minnesota Dept of Ed	X												
Missouri Dept of Ed	X												
Nevada Dept of Ed												X	
New Mexico Dept of Ed	X											X	
New York Office of Teaching	X											X	
NH Dept		X	X	X	X							X	X

Organization Name	Education Portal	On-line Courses/ Classes	State Correlated Curriculum	Lesson Plans Bank	Juried Lesson Plan Bank	Tradition Assessment	Student Instruct Software	Performance-based Assessment	Student Information Systems	Pre-test/ Post-test	Prescriptive Tutoring	Web Links	Other Media
of Ed													
NC Dept of Public Instruction									X				
Oregon Dept of Education	X											X	
Wisconsin Dept of Public Instruction	X											X	

Table 2a
Target Audience – Private Sector

Organization Name	Classroom Teachers	Support Personnel	Campus Admin	District Admin	School Board	Parents	Students	Community Members	Teacher Education	Other
AOL	X	X				X	X	X	X	
bigchalk.com	X	X	X	X	X	X	X	X		
Brainium	X					X	X			
Cablevision	X	X	X	X		X	X		X	
Chancery	X			X	X	X	X			
Classroom Connect	X	X	X	X	X	X	X	X	X	
Co-nect	X		X							
EDmin.com	X	X	X	X	X	X	X	X	X	
Excelsior	X	X	X	X		X	X			
IBM	X	X	X	X	X	X	X	X	X	X
iMind	X		X	X		X	X			
Intel	X	X	X	X						X
Learning Station	X	X	X	X	X	X	X	X	X	
Lightspan	X		X	X	X	X	X	X	X	
Lindy Software	X	X		X		X			X	
NCS	X	X	X	X	X	X	X	X	X	
NetSchools	X	X	X	X		X	X			
Oz New Media	X		X	X	X	X	X	X	X	X
Riverdeep	X			X		X	X		X	
SchoolCity	X					X	X	X		
Teacher Universe	X	X	X	X	X	X	X		X	
Teachscape	X		X							
Turner Learning	X					X	X			
wwwrrr	X	X	X	X	X	X	X	X		

Table 2b
Target Audiences – Nonprofit Organizations

Organization Name	Classroom Teachers	Support Personnel	Campus Admin	District Admin	School Board	Parents	Students	Community Members	Teacher Education	Other
EPIE Institute	X					X	X	X	X	
MCI WorldCom Foundation	X			X					X	X
Project Achieve	X						X		X	X
SRI International	X	X		X					X	

Table 2c
Target Audiences – States

Organization Name	Classroom Teachers	Support Personnel	Campus Admin	District Admin	School Board	Parents	Students	Community Members	Teacher Education	Other
CA Learning Resource Network	X		X	X	X	X			X	
Maine Dept of Ed	X					X	X	X	X	
Idaho Dept of Ed	X	X		X	X	X		X	X	X
Illinois State Board of Ed	X			X		X	X		X	
Iowa Dept of Ed	X			X	X	X			X	
Iowa Dept of Ed	X		X	X	X	X	X	X	X	X
Kansas State Dept of Ed	X	X	X	X	X	X	X	X	X	
Maryland Dept of Ed	X	X	X	X	X	X	X	X	X	
Minnesota Dept of Ed										
Missouri Dept of Ed	X	X		X	X	X		X	X	X
Nevada Dept of Ed	X									
New Mexico State Dept of Ed	X	X	X	X	X	X	X	X	X	X
New York Office of Teaching	X			X		X			X	
NH Dept of Ed	X	X	X	X	X	X	X	X	X	X
NC Dept of Public Instruction	X	X	X	X	X					X
Oregon Dept of Ed	X		X	X	X	X		X	X	
Wisconsin Dept of Public Instruction	X	X	X	X	X	X	X	X	X	X

Table 3a
Curriculum and Teaching Standards – Private Sector

Organization Name	Local District Database	State Database	National Database	International Database	NA	National Board of Professional Teaching Standards	NCATE Standards	ISTE Technology Standards	State Technology Standards	Other	NA
AOL.								X			
bigchalk.com	X	X	X						X		
Brainium.com		X	X	X				X			
Cablevision		X									X
Chancery					X						X
Classroom Connect		X	X					X	X	X	
Co-nect	X	X	X							X	
EDmin.com	X	X								X	
Excelsior					X						
IBM	X	X	X					X	X	X	
iMind	X	X	X								X
Intel					X			X		X	
Learningstation	X	X	X	X			X	X	X		
Lightspan.	X	X						X		X	
Lindy Software			X								
NCS	X	X	X	X			X		X		
NetSchools	X	X	X			X	X	X	X	X	
Oz New Media					X						
Riverdeep		X	X								X
SchoolCity											
Teacher Universe		X	X			X	X	X	X		
Teachscape		X	X			X	X	X			
Turner Learning			X								
wwwrrr					X			X			

Table 3b
Curriculum and Teaching Standards – Nonprofit Organizations

Organization Name	Local District Database	State Database	National database	International Database	NA	National Board of Professional Teaching Standards	NCATE Standards	ISTE Technology Standards	State Technology Standards	Other	NA
EPIE Institute		X	X	X			X	X	X		
MCI WorldCom Foundation			X		X					X	
Project Achieve					X						X
SRI International					X						

Table 3c
Curriculum and Teaching Standards – States

Organization Name	Local District Database	State database	National Database	International Database	NA	National Board of Professional Teaching Standards	NCATE Standards	ISTE Technology Standards	State Technology Standards	Other	NA
California Learning Resource Network		X									
Maine Dept of Ed	X						X	X	X		
Idaho Dept of Ed							X	X	X		
Illinois State Board of Ed					X					X	
Iowa Dept of Ed		X			X						X
Kansas State Dept of Ed		X			X		X	X			
Maryland Dept of Ed		X							X		
Minnesota Dept of Ed											
Missouri Dept of Ed		X							X		
Nevada Dept of Ed	X	X				X	X	X	X		
New Mexico Dept of Ed					X						X
New York Office of Teaching					X						
NH Dept of Education	X	X	X			X	X	X			
NC Dept of Public Instruction					X						X
Oregon Dept of Ed		X								X	
Wisconsin Dept of Public Instruction		X			X	X	X	X	X		X

Table 4a
Instructional Support – Private Sector

Organization Name	Learning Activities	Pedagogy Support	Lesson Plan Database/ Templates	Juried Lesson Plan Database/ Templates	Prescriptive Tutoring	Assignment Management/ Monitoring	Web-based Instructional Software	NA
AOL	X			X			X	
bigchalk.com	X		X			X		
Brainium.com	X	X	X			X	X	
Cablevision	X	X	X	X				
Chancery			X					
Classroom Connect	X	X	X				X	
Co-nect	X	X		X				
EDmin.com	X		X	X		X	X	
Excelsior								X
IBM	X	X	X	X		X	X	
iMind	X		X		X		X	
Intel		X	X					
LearningStation	X	X	X		X		X	
Lightspan	X	X	X	X	X		X	
Lindy Software								X
NCS	X	X	X	X	X	X	X	
NetSchools	X	X	X	X	X	X	X	
Oz New Media	X	X	X		X	X	X	
Riverdeep	X		X			X	X	
SchoolCity	X		X	X				
Teacher Universe	X	X	X		X		X	
Teachscape	X	X						
Turner Learning	X	X	X					
wwwrrr	X	X	X	X		X	X	

Table 4b
Instructional Support – Nonprofit Organizations

Organization Name	Learning Activities	Pedagogy Support	Lesson Plan Database/ Templates	Juried Lesson Plan Database/ Templates	Prescriptive Tutoring	Assignment Management/ Monitoring	Web-based Instructional Software	NA
EPIE Institute	X	X	X	X		X	X	
MCI WorldCom Foundation	X			X				
Project Achieve	X	X	X				X	
SRI International	X	X						

Table 4c
Instructional Support – States

Organization Name	Learning Activities	Pedagogy Support	Lesson Plan Database/ Templates	Juried Lesson Plan Database/ Templates	Prescriptive Tutoring	Assignment Management/ Monitoring	Web-based Instructional Software	NA
CA Learning Resource Network	X		X	X				
Maine Dept of Ed	X	X	X					
Idaho Dept of Ed								
Illinois State Board of Ed	X	X	X				X	
Iowa Dept of Ed								X
Kansas State Dept of Ed	X	X						X
Maryland Dept of Ed	X	X	X			X	X	
Minnesota Dept of Ed								
Missouri Dept of Ed	X	X	X			X		
Nevada Dept of Ed								X
New York Office of Teaching								X
NH Dept of Education	X	X	X	X	X	X	X	
New Mexico Dept of Ed								X
NC Dept of Public Instruction						X		
Oregon Dept of Ed								X
Wisconsin Dept of Public Instruction		X						X

Table 5a
Assessment of Students – Private Sector

Organization Name	Assessment of Web-based Instructional Software	Student Portfolios Web-based	Student Portfolios – Print s	Student Portfolios – Combination	On-line Journals	Exemplary Student Work	Curriculum-embedded assessment	Stand alone Test (state, Entrance)	Monitoring Student Progress	Other	NA
AOL	X										
bigchalk.com		X								X	
Brainium.com	X	X	X	X		X	X	X	X		
Cablevision						X					
Chancery								X	X		
Classroom Connect	X	X			X	X	X		X		
Co-nect						X				X	
EDmin.com		X	X	X	X	X	X	X	X		
Excelsior											X
IBM			X		X	X	X	X	X		
iMind							X				
Intel											X
Learning Station	X						X				
Lightspan	X						X				
Lindy Software							X				
NCS	X	X	X	X	X	X	X	X	X		
NetSchools		X		X	X	X	X	X	X		
Oz New Media	X	X	X	X							
Riverdeep	X			X			X	X	X		
SchoolCity											
Teacher Universe	X	X			X		X		X		
Teachscape											X
Turner Learning											
wwwrrr											X

Table 5b
Assessment of Students – Nonprofit Organizations

Organization Name	Assessment of Web-based Instructional Software	Student Portfolios Web-based	Student Portfolios – Print	Student Portfolios – Combination	On-line Journals	Exemplary Student Work	Curriculum-embedded Assessment	Stand alone Test (state, entrance)	Monitoring Student Progress	Other	NA
EPIE Institute	X	X			X	X	X		X		
MCI WorldCom Foundation											X
Project Achieve									X	X	
SRI International						X		X			

Table 5c
Assessment of Students – States

Organization Name	Assessment of web-based Instructional Software	Student Portfolios Web-based	Student Portfolios Print	Student Portfolio - Combination	On-line Journals	Exemplary Student Work	Curriculum-embedded Assessment	Stand alone Test (state, entrance)	Monitoring Student Progress	Other	NA
CA Learning Resource Network	X				X						
Idaho Dept of Ed		X	X	X				X			
Illinois State Board of Ed		X									
Iowa Dept of Ed											X
Kansas State Dept of Ed							X	X			X
Maine Dept of Ed	X	X			X						
Maryland Dept of Ed						X	X	X	X		
Minnesota Dept of Ed											
Missouri Dept of Ed			X				X	X	X		
Nevada Dept of Ed								X			
New Mexico Dept of Ed											X
New York Office of Teaching											X
NH Dept of Ed											X
NC Dept of Public Instruction		X						X	X		
Oregon Dept of Ed											X
Wisconsin Dept of Public Instruction										X	

Table 6a
Assessment of Educators – Private Sector

Organization name	Assessment Using Technology System	On-line Journals	Peer Review of Work	Assessment Based on National Professional Standards	Course-embedded Assessment	Video case embedded Assessment	End-of-course Assessment	Other
AOL	X				X			
bigchalk.com								
Brainium.com	X							
Cablevision			X					
Chancery								
Classroom Connect	X	X	X		X		X	
Co-nect								X
EDmin.com	X	X	X		X	X	X	
Excelsior								
IBM	X		X	X				X
iMind								
Intel								
LearningStation	X				X			
Lightspan	X		X	X	X		X	
Lindy Software	X			X			X	
NCS	X	X	X	X	X		X	
NetSchools	X				X		X	
Oz New Media								
Riverdeep	X			X	X			
SchoolCity								
Teacher Universe	X		X	X	X		X	
Teachscape	X	X	X	X	X	X	X	
Turner Learning		X						
wwwrrr	X				X		X	

Table 6b
Assessment of Educators – Nonprofit Organizations

Organization Name	Assessment Using Technology System	On-line Journals	Peer Review of Work	Assessment Based on National Professional Standards	Course-embedded Assessment	Video case embedded Assessment	End-of-course Assessment	Other
EPIE Institute	X	X	X	X	X	X	X	
MCI WorldCom Foundation	X		X					
Project Achieve	X							
SRI International			X					

Table 6c
Assessment – Educators – States

Organization Name	Assessment Using Technology System	On-line Journals	Peer Review of Work	Assessment Based on National Professional Standards	Course-embedded Assessment	Video case embedded Assessment	End-of-course Assessment	Other
California Learning Resource Network								
Idaho Dept of Ed	X			X				
Illinois State Board of Education	X							
Iowa Dept of Ed								
Kansas Dept of Ed	X	X						
Maine Dept of Ed	X	X						
Maryland Dept of Ed								
Minnesota Dept of Ed								
Missouri Dept of Ed	X			X				
Nevada Dept of Ed								
New Mexico Dept of Ed	X							
New York Office of Teaching				X				
NH Dept of Ed	X							
NC Dept of Public Instruction							X	
Oregon Dept of Ed								X
Wisconsin Dept of Public Instruction								X

Table 7a
Professional Development Focus – Private Sector

Organization Name	Training on the use of your System	Technology Integration for Educators	Classroom Management Strategies	Mathematics	English/ Language Arts	Special Education	English Language Learners	Science	Social Studies	Other
AOL		X								
bigchalk.com	X	X								X
Brainium.com	X	X	X	X	X		X	X	X	
Cablevision	X	X								X
Chancery	X	X								
Classroom Connect	X	X	X	X	X	X		X	X	
Co-nect	X	X								X
EDmin.com	X	X	X							
Excelsior										
IBM	X	X	X							X
iMind										
Intel		X								X
Learning Station	X	X	X	X	X		X	X	X	
Lightspan	X	X	X	X	X		X			
Lindy Software										
NCS	X	X	X	X	X	X	X	X	X	
NetSchools	X	X	X	X	X	X	X	X	X	X
Oz New Media	X	X	X	X	X		X	X	X	
Riverdeep		X		X	X			X		
SchoolCity	X	X								
Teacher Universe	X	X		X	X			X		
Teachscape	X	X	X	X	X	X	X	X	X	
Turner Learning										
wwwrrr	X	X								

Table 7b
Professional Development Focus – Nonprofit Organizations

Organization Name	Training on the Use of your System	Technology Integration for Educators	Classroom Management Strategies	Mathematics	English/ Language Arts	Special Education	English Language Learners	Science	Social Studies	Other
EPIE Institute	X	X		X	X			X		
MCI WorldCom Foundation	X	X	X	X	X		X	X	X	
Project Achieve	X	X								X
SRI International	X	X								X

Table 7c
Professional Development Focus – States

Organization Name	Training on the Use of your System	Technology Integration for Educators	Classroom Management Strategies	Mathematics	English/ Language Arts	Special Education	English Language Learners	Science	Social Studies	Other
California Learning Resource Network										
Maine Dept of Ed		X						X		
Idaho Dept of Education		X	X							
Illinois Board of Ed	X	X		X	X			X	X	
Iowa Dept of Ed		X		X	X	X	X	X	X	
Kansas Dept of Ed		X								
Maryland Dept of Ed				X	X		X		X	X
Minnesota Dept of Ed										
Missouri Dept of Ed	X	X	X	X	X	X	X	X	X	X
Nevada Dept of Ed										
New York Office of Teaching										
NH Dept of Ed		X		X	X	X	X	X	X	
NM Dept of Ed										X
NC Dept of Public Instruction										
Oregon Dept of Ed		X								
Wisconsin Dept of Public Instruction		X	X	X	X	X	X	X	X	X

Table 8a
Professional Development Offerings – Private Sector

Organization Name	On-line Courses for Graduate Credit	On-line Courses Just in Time or Job-Embedded	On site Professional Development	Video Case Studies Web-based	Video Case Studies CD-Rom Delivered	Video-Based Instruction	Systemic Professional Development	On-line Professional Development
AOL								
bigchalk.com		X	X					X
Brainium.com	X	X	X					X
Cablevision			X					X
Chancery		X	X				X	
Classroom Connect	X		X				X	X
Co-nect		X					X	X
EDmin.com			X	X	X			
Excelsior		X	X					
IBM			X				X	X
iMind								
Intel			X					
LearningStation		X	X				X	X
Lightspan		X	X		X	X	X	X
Lindy Software								
NCS	X	X	X	X	X	X	X	
NetSchools	X	X	X				X	X
Oz New Media		X	X	X	X			X
Riverdeep	X							X
SchoolCity								
Teacher Universe	X		X				X	X
Teachscape	X	X	X	X	X	X	X	X
Turner Learning	X							
wwwrrr		X	X					X

Table 8b
Professional Development Offerings – Nonprofit Organizations

Organization Name	On-line Courses for Graduate Credit	On-line Courses Just in Time or Job-Embedded	On Site Professional Development	Video Case Studies Web-based	Video Case Studies CD-Rom Delivered	Video-Based Instruction	Systemic Professional Development	On-line Professional Development
EPIE Institute	X	X		X		X	X	X
MCI WorldCom Foundation	X	X	X				X	X
Project Achieve								X
SRI International	X		X					X

Table 8c
Professional Development Offerings – States

Organization Name	On-line Courses for Graduate Credit	On-line Courses Just in Time or Job-Embedded	On site Professional Development	Video Case Studies Web-based	Video Case Studies CD-Rom Delivered	Video-Based Instruction	Systemic Professional Development	On-line Professional Development
California Learning Resource Network								
Maine Dept of Ed								
Idaho Dept of Ed								
Illinois Board of Ed	X	X					X	
Iowa Dept of Ed			X			X	X	
Kansas Dept of Ed							X	
Maryland Dept of Ed		X					X	X
Minnesota Dept of Ed								
Missouri Dept of Ed	X		X			X		
Nevada Dept of Ed								
New York Office of Teaching								
NH Dept of Ed								X
NM Dept of Ed								
NC Dept of Public Instruction								
Oregon Dept of Ed								
Wisconsin Dept of Public Instruction							X	

Table 9a
Access and Reporting Levels – Private Sector

Organization Name	Teachers	School District Officials	Students	Parents	Community Members	Preservice Educators	Teacher Educators	Other	NA
AOL	X	X							
bigchalk.com									X
Brainium.com	X	X	X	X					
Cablevision	X	X	X	X	X	X	X		
Chancery	X	X	X	X					
Classroom Connect	X	X	X	X		X	X		
Co-nect	X	X							
EDmin.com	X	X	X	X		X	X		
Excelsior			X	X					
IBM	X	X	X	X	X	X	X		
iMind	X	X	X	X					
Intel									X
LearningStation	X	X	X	X					
Lightspan	X	X	X	X	X	X	X		
Lindy Software									X
NCS	X	X	X	X	X	X	X		
NetSchools	X	X	X	X					
Oz New Media	X	X	X	X		X	X		
Riverdeep	X	X	X	X			X		
SchoolCity	X	X	X	X	X				
Teacher Universe	X	X	X			X	X		X
Teachscape	X	X							
Turner Learning									X
wwwrrr	X	X	X	X	X				

Table 9b
Access and Reporting Levels – Nonprofit Organizations

Organization Name	Teachers	School District Officials	Students	Parents	Community Members	Preservice Educators	Teacher Educators	Other	NA
EPIE Institute	X		X	X					
MCI WorldCom Foundation	X	X			X	X	X		
Project Achieve	X		X	X	X	X	X		
SRI International									X

Table 9c
Access and Reporting Levels – States

Organization Name	Teachers	School District Officials	Students	Parents	Community Members	Preservice Educators	Teacher Educators	Other	NA
CA Learning Resource Network	X	X	X	X	X	X	X		
Idaho Dept of Ed	X	X	X	X	X	X	X		
Illinois State Board of Ed	X	X							
Iowa Dept of Ed	X	X	X	X	X	X	X		
Kansas Dept of Ed	X	X	X	X	X	X	X		
Maine Dept of Ed	X	X		X	X		X		
Maryland Dept of Ed	X	X	X	X	X	X	X		
Minnesota Dept of Ed									
Missouri Dept of Ed	X	X	X	X	X	X	X	X	X
Nevada Dept of Ed	X	X	X	X	X	X	X		
New Mexico Dept of Ed									X
New York Office of Teaching		X					X		
NH Dept of Ed									X
NC Dept of Public Instruction	X	X	X	X	X	X	X		
Oregon Dept of Ed	X	X	X	X	X	X	X		
Wisconsin Dept of Public Instruction	X	X	X	X	X	X	X	X	

Table 10a
Data Analysis – Private Sector

Organization Name	State data	Local data	National Comparisons	International Comparisons	Other	NA	Integration within State/local Data warehouse	NA
AOL						X		X
bigchalk.com						X		X
Brainium.com	X	X	X	X			X	
Cablevision						X		X
Chancery	X	X			X			X
Classroom Connect	X		X			X		X
Co-nect					X			
EDmin.com	X	X					X	
Excelsior		X						X
IBM	X	X					X	
iMind						X		X
Intel						X		X
LearningStation	X	X	X					
Lightspan		X						
Lindy Software						X		X
NCS	X	X	X				X	
NetSchools	X	X					X	
Oz New Media			X	X				X
Riverdeep						X		X
SchoolCity						X		X
Teacher Universe						X		X
Teachscape	X	X	X				X	
Turner Learning						X		X
wwwrrr						X		X

Table 10b
Data Analysis – Nonprofit Organizations

Organization Name	State data	Local data	National Comparisons	International Comparisons	Other	NA	Integration within State/Local Data warehouse	NA
EPIE Institute						X		X
MCI WorldCom Foundation	X	X						X
Project Achieve						X		X
SRI International						X		X

Table 10c
Data Analysis – State

Organization Name	State data	Local data	National Comparisons	International Comparisons	Other	NA	Integration within State/Local Data Warehouse	NA
CA Learning Resource Network								
Idaho Dep. of Ed	X						X	
Illinois Board of Ed						X		X
Iowa Dept of Ed	X		X	X				
Kansas Dept of Ed	X	X					X	
Maine Dept of Ed	X	X	X					X
Maryland Dept of Ed	X	X		X			X	
Minnesota Dept of Ed								
Missouri Dept of Ed	X	X	X	X			X	
Nevada Dept of Ed	X	X	X				X	
New Mexico Dept of Ed	X	X						X
New York Office of Teaching	X						X	
NH Dept of Ed						X		X
NC Dept of Public Instruction	X	X					X	
Oregon Dept of Ed	X	X						
Wisconsin Dept of Public Instruction	X	X	X				X	

Table 11a
Performance Comparisons – Private Sector

Organization Name	Local data	State data	National data	International data	NA
AOL					X
bigchalk.com					X
Brainium.com	X	X	X	X	
Cablevision					X
Chancery	X				
Classroom Connect					X
Co-nect			X		
EDmin.com	X				
Excelsior					X
IBM	X	X			
iMind					X
Intel					X
LearningStation					
Lightspan					
Lindy Software					X
NCS	X	X	X		
NetSchools	X	X			
Oz New Media	X	X	X	X	
Riverdeep	X	X	X		
SchoolCity					X
Teacher Universe					X
Teachscape	X	X	X		
Turner Learning					X
wwwrrr					X

Table 11b
Performance Comparisons – Nonprofit Organizations

Organization Name	Local data	State data	National data	International data	NA
EPIE Institute					X
MCI WorldCom Foundation					X
Project Achieve					X
SRI International					X

Table 11c
Performance Comparisons – States

Organization Name	Local data	State data	National data	International data	NA
CA Learning Resource Network					
Idaho Dept of Ed		X			
Illinois Board of Ed	X	X			
Iowa Dept of Ed		X	X		
Kansas Dept of Ed	X	X			
Maine Dept of Ed					X
Maryland Dept of Ed	X	X		X	
Minnesota Dept of Ed					
Missouri Dept of Ed	X	X	X	X	
Nevada Dept of Ed	X	X	X		
New Mexico Dept of Ed	X	X			
New York Office of Teaching		X			
NH Dept of Ed					X
NC Dept of Public Instruction	X	X			
Oregon Dept of Ed	X	X			
Wisconsin Dept of Public Instruction	X	X			

Table 12a
Web-posted Progress Reports – Private Sector

Organization Name	Teachers	Parents	School Officials	Students	Community Members	Other
AOL	X	X		X		
bigchalk.com	X	X	X	X	X	
Brainium.com	X	X	X	X		
Cablevision						
Chancery	X	X	X	X		
Classroom Connect	X		X	X		
Co-nect						X
EDmin.com						X
Excelsior		X		X		
IBM	X	X	X			
iMind	X	X	X	X		
Intel						X
LearningStation						
Lightspan						
Lindy Software						
NCS	X	X	X	X	X	
NetSchools	X	X	X	X		
Oz New Media	X	X	X	X		
Riverdeep	X	X				
SchoolCity						
Teacher Universe	X		X			
Teachscape						X
Turner Learning						
wwwrrr	X	X	X	X	X	X

Table 12b
Web-posted Progress Reports – Nonprofit Organizations

Organization Name	Teachers	Parents	School officials	Students	Community members	Other
EPIE Institute	X	X		X		X
MCI WorldCom Foundation	X		X		X	
Project Achieve						X
SRI International						

Table 12c
Web-posted Progress Reports – States

Organization Name	Teachers	Parents	School Officials	Students	Community Members	Other
CA Learning Resource Network						
Idaho Dept of Ed	X					
Illinois Board of Ed	X	X	X	X	X	
Iowa Dept of Ed						
Kansas Dept of Ed			X			
Maine Dept of Ed						
Maryland Dept of Ed	X	X	X	X	X	
Minnesota Dept of Ed						
Missouri Dept of Ed	X	X	X	X	X	
Nevada Dept of Ed						
New Mexico Dept of Ed						
New York Office of Teaching						
NH Dept of Ed						
NC Dept of Public Instruction						
Oregon Dept of Ed						
Wisconsin Dept of Public Instruction	X	X	X	X	X	X

Table 13
Web-based Delivery Systems

Organization Name	Standards Database	Instructional Support	Assessment Tools	Professional Development	Data Collection and Analysis	On-line Communi-cation Tools
CA Learning Resource Network	State Provided	State Provided	Education Service Provided	Education Service Provided	Education Service Provided	Education Service Provided
Idaho Dept of Ed	State Provided	Education Service Provided	Education Service Provided	Education Service Provided	State Provided	State Provided
Illinois Board of Ed		Education Service Provided	Education Service Provided	Education Service Provided		Education Service Provided
Iowa Dept of Ed					State Provided	
Kansas Dept of Ed				Education Service Provided	State Provided	State Provided
Maine Dept of Ed	Education Service Provided	Education Service Provided	Education Service Provided	Education Service Provided	Education Service Provided	Education Service Provided
Maryland Dept of Ed	State Provided	State Provided	State Provided	State Provided	State Provided	State Provided
Missouri Dept of Ed						
NC Dept of Public Instruction	State Provided	State Provided	State Provided	State Provided	State Provided	State Provided
Nevada Dept of Ed						
NH Dept of Ed	State Provided	Education Service Provided	Education Service Provided	Education Service Provided	State Provided	Education Service Provided
NM Dept of Ed	Education Service Provided	State Provided	Education Service Provided	State Provided	State Provided	Education Service Provided
NY Office of Teaching						
Oregon Dept of Ed				State Provided	State Provided	
Wisconsin Dept of Public Instruction	State Provided	Education Service Provided	Education Service Provided	State Provided	State Provided	Education Service Provided

Table 14
Implementation Challenges – Training on the System

Organization Name	Train the Trainer	Self-paced Tutorial	Face-to-Face	On-line Resources and FAQs	Other	NA
AOL						
bigchalk.com		X	X	X	X	
Brainium	X	X		X		
Cablevision	X		X	X		
Chancery	X	X	X	X		X
Classroom Connect	X	X	X	X		
Co-nect	X		X	X		
EDmin.com	X	X	X	X		
Excelsior Software	X	X	X	X		
IBM	X	X	X	X		
iMind	X	X	X	X		
Intel	X		X	X	X	
LearningStation	X		X	X		
Lightspan	X	X	X	X		
Lindy Software	X					
NCS	X	X	X	X		
NetSchools	X	X	X	X		
Oz New Media	X	X	X	X	X	
Riverdeep		X		X		
SchoolCity	X			X		
Teacher Universe	X	X	X	X		
Teachscape	X	X	X	X		
Turner Learning		X				
wwwrrr	X	X	X	X		
EPIE Institute	X	X	X	X		
MCI WorldCom Foundation	X			X		
Project Achieve	X	X		X	X	
SRI International	X	X	X	X	X	
CA Learning Resource Network	X			X	X	
Idaho Dept of Ed	X					
Illinois State Board of Ed	X		X	X		
Iowa Dept of Ed	X		X			
Kansas State Dept of Ed	X		X			
Maine Dept of Ed	X			X		
Maryland Dept of Ed	X	X	X	X		
Minnesota Dept of Ed						
Missouri Dept of Ed			X	X		
Nevada Dept of Ed						X
New York Office						

Organization Name	Train the Trainer	Self-paced Tutorial	Face-to-Face	On-line Resources and FAQs	Other	NA
of Teaching						
NH Dept of Ed	X			X		
NM Dept of Ed	X		X	X		
NC Dept of Public Instruction	X		X	X		
Oregon Dept of Ed				X	X	
Wisconsin Dept of Public Instruction	X		X			

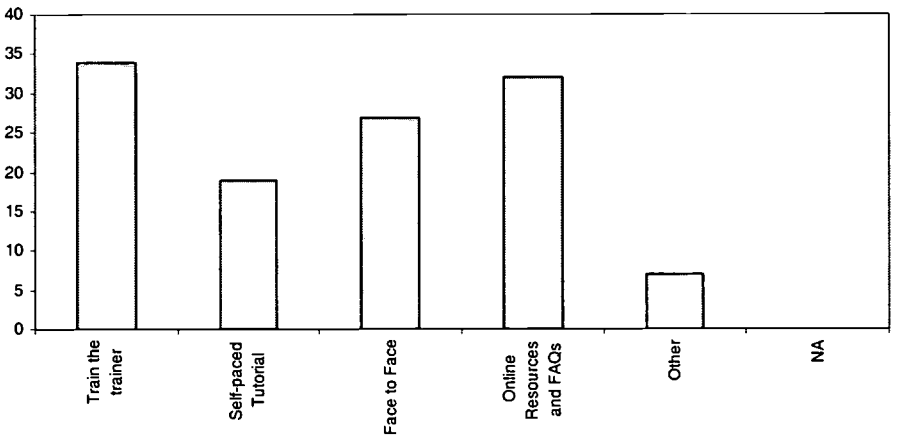


Table 15
Implementation – Technical Support

Organization Name	On Site Technical Personnel	On-line FAQs	On-line Discussion Boards	On-line ListServs	Helpdesk 800 Phone	Helpdesk Toll Phone	Other
AOL		X	X		X		
bigchalk.com		X					X
Brainium		X			X		
Cablevision					X		
Chancery	X	X	X	X	X	X	X
Classroom Connect		X	X	X	X		
Co-nect	X	X	X	X	X		
EDmin.com		X	X		X	X	
Excelsior Software	X				X		X
IBM	X	X	X		X		
iMind		X			X		X
Intel		X	X				
LearningStation	X	X			X	X	
Lightspan		X	X	X	X		
Lindy Software	X						
NCS	X	X	X	X	X	X	
NetSchools	X	X			X		
Oz New Media		X	X	X	X		
Riverdeep	X	X			X		
SchoolCity		X			X		
Teacher Universe	X	X		X	X		
Teachscape		X	X	X		X	X
Turner Learning		X	X	X			
wwwrrr		X			X		
EPIE Institute		X	X	X			
MCI WorldCom Foundation		X		X			
Project Achieve	X		X				X
SRI International		X		X			X
CA Learning Resource Network		X	X	X			
Idaho Dept of Ed	X			X			
Illinois State Board of Ed	X						
Iowa Dept of Ed	X	X		X	X		
Kansas State Dept of Ed	X						
Maine Dept of Ed							
Maryland Dept of Ed		X					
Minnesota Dept of Ed							
Missouri Dept of Ed	X	X	X	X	X		
Nevada Dept of Ed	X						
New York Office of						X	

Organization Name	On Site Technical Personnel	On-line FAQs	On-line Discussion Boards	On-line ListServs	Helpdesk 800 Phone	Helpdesk Toll Phone	Other
Teaching							
NH Dept of Ed				X			
NM Dept of Ed	X	X		X		X	
NC Dept of Public Instruction	X	X	X	X	X		
Oregon Dept of Ed		X		X			
Wisconsin Dept of Public Instruction	X	X		X			

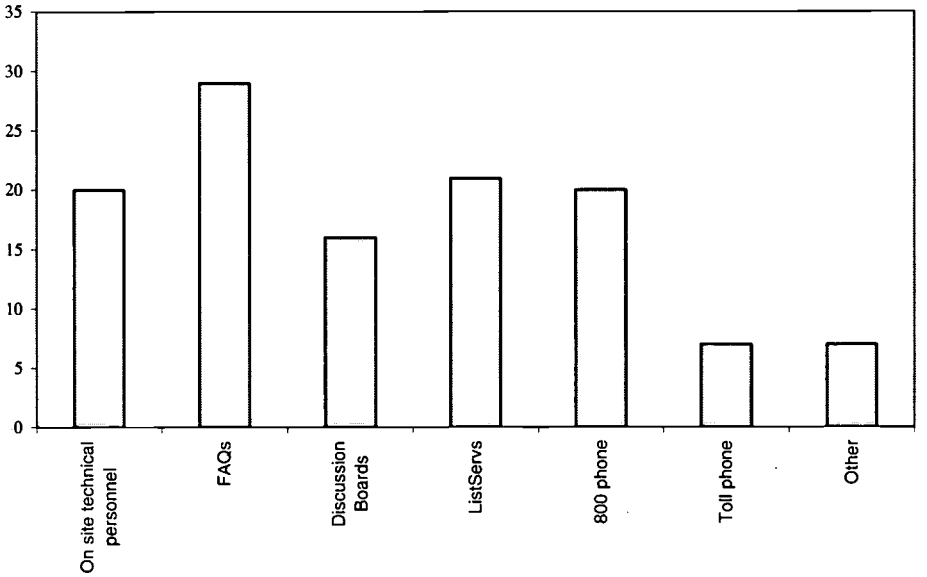


Table 16
Challenges to Implementation

Organization Name	Processor Speed	Operating System Requirements	Memory Requirements	Bandwidth	Computer Access	Internet Access	Trouble-Shooting	Data Analysis	System Capacity	Personnel	Staff time	Other
AOL						X					X	
bigchalk.co	X			X	X	X			X			
Brainium	X			X	X					X		
Cablevision	X	X	X		X		X		X	X	X	X
Chancery	X	X	X							X	X	X
Classroom Connect	X	X	X	X	X	X	X		X	X	X	
Co-nect							X	X				
EDmin.com				X	X	X						X
Excelsior Software	X		X	X	X					X	X	
IBM				X		X			X			
iMind												
Intel												
LearningStation	X	X	X	X	X	X	X					
Lightspan				X	X	X	X			X		
Lindy Software									X	X		
NCS	X	X	X	X	X	X			X	X	X	
NetSchools					X	X			X	X	X	X
Oz New Media				X	X	X			X	X	X	
Riverdeep		X	X	X	X					X	X	
SchoolCity						X						X
Teacher Universe	X	X	X	X	X	X			X	X	X	
Teachscape	X			X		X			X	X		
Turner Learning	X			X		X			X		X	
wwwrrr											X	
EPIE Institute	X	X	X	X	X	X			X	X	X	
MCI WorldCom Foundation				X		X					X	
Project Achieve					X	X	X			X	X	X
SRI International	X	X	X	X	X	X	X		X		X	
CA Learning Resource Network					X				X	X		
Idaho Dept. of Ed			X			X	X			X		
Illinois State Board of Ed		X						X				
Iowa Dept of Ed	X		X					X	X	X		
Kansas State Dept of Ed	X							X	X	X		
Maine Dept of Ed	X			X	X			X				
Maryland Dept of Ed	X		X			X		X	X			
Minnesota Dept												

Organization Name	Processor Speed	Operating System Requirements	Memory Requirements	Bandwidth	Computer Access	Internet Access	Trouble-Shooting	Data Analysis	System Capacity	Personnel	Staff time	Other
of Ed												
Missouri Dept. of Ed	X						X		X	X	X	X
Nevada Dept of Ed	X	X	X	X	X			X	X	X		
New York Office of Teaching					X			X	X			
NH Dept of Ed			X	X	X		X	X	X	X		
NM Dept of Ed			X							X		
NC Dept of Public Instruction	X	X	X			X	X			X		
Oregon Dept of Ed				X	X					X		
Wisconsin Dept of Public Instruction			X			X		X	X	X		

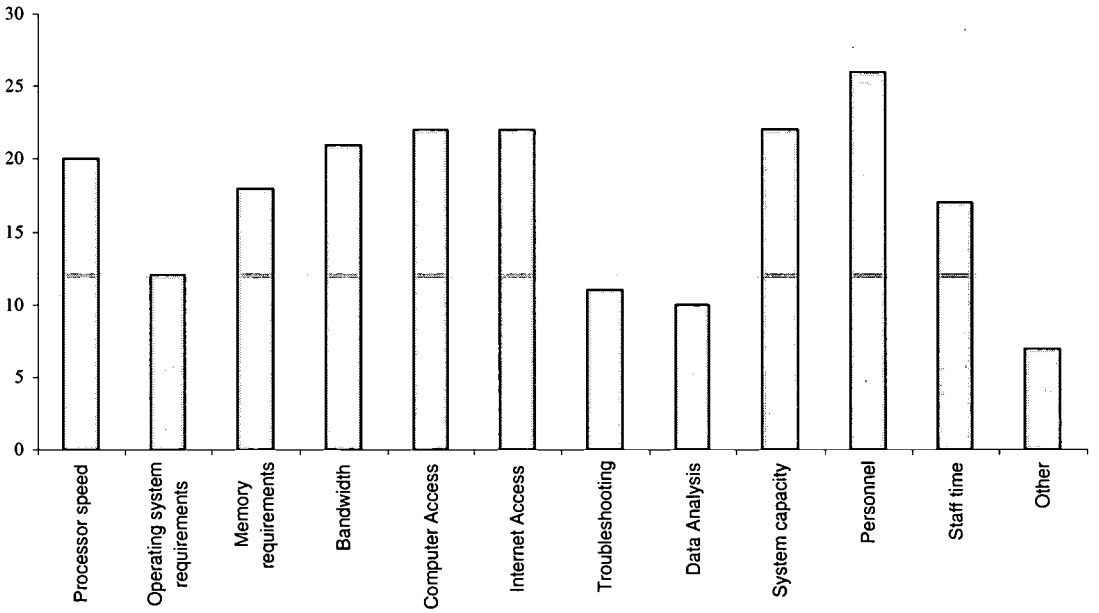


Table 17a
Teacher Productivity and Tools – Private Sector

Organization Name	Assessment Reports Test Scores	Electronic Gradebooks Attendance	Electronic Report Card	Calendar	Syllabus Creator	Other	NA
AOL		X		X		X	
bigchalk.com				X			
Brainium.com	X	X	X				
Cablevision				X			
Chancery	X	X	X	X		X	
Classroom Connect							X
Co-nect						X	
EDmin.com	X	X	X	X	X	X	
Excelsior		X	X				
IBM				X		X	
iMind	X	X		X			
Intel							X
LearningStation	X	X	X	X	X		
Lightspan				X	X		
Lindy Software	X						
NCS	X	X	X	X	X		
NetSchools	X	X		X		X	
Oz New Media	X			X			
Riverdeep	X	X					
SchoolCity							

Organization Name	Assessment Reports Test Scores	Electronic Gradebooks Attendance	Electronic Report Card	Calendar	Syllabus Creator	Other	NA
Teacher Universe	X						
Teachscape							X
Turner Learning							X
wwwrrr				X			

Table 17b
Teacher Productivity and Tools – Nonprofit Organizations

Organization Name	Assessment Reports Test Scores	Electronic Gradebooks Attendance	Electronic Report Card	Calendar	Syllabus Creator	Other	NA
EPIE Institute							X
MCI WorldCom Foundation							X
Project Achieve							X
SRI International						X	

Table 17c
Teacher Productivity and Tools – State

Organization Name	Assessment Reports Test Scores	Electronic Gradebooks Attendance	Electronic Report Card	Calendar	Syllabus Creator	Other	NA
CA Learning Resource Network							
Idaho Dept of Ed				X			
Illinois State Board of Ed	X					X	
Iowa Dept of Ed							X
Kansas State Dept of Ed	X						
Maine Dept of Ed							X
Maryland State Dept of Ed	X		X				
Minnesota Dept of Ed							
Missouri Dept of Ed	X		X				
Nevada Dept of Ed				X			
New Mexico Dept of Ed							X
New York Office of Teaching	X						
NH Dept of Ed				X			
North Carolina Dept of Public Instruction	X	X	X	X			
Oregon Dept of Ed				X			
Wisconsin Dept of Public Instruction	X						

Table 18
Pricing Models

Organization Name	Free No Advertising	Free, Advertising Permitted	Individual Educator Subscription	Parent Subscription	Student Subscription	District Campus License	Combination of Parent & District Subscription	Basic Service	Value- Added Service	Other	NA
AOL	X										
bigchalk.co									X	X	
Brainium .com							X				
Cablevision									X		
Chancery										X	
Classroom Connect			X	X		X				X	
Co-nect								X			
EDmin.com					X						
Excelsior										X	
IBM										X	
iMind						X					
Intel	X										
Learning Station			X	X		X	X	X	X		
Lightspan.						X					
Lindy Software											X
NCS			X			X	X				
NetSchools						X					
Oz New Media.						X					
Riverdeep							X				
SchoolCity						X					
Teacher Universe			X			X					
Teachscape						X					
Turner Learning	X										
wwwrrr						X				X	

Table 19
Hardware Type to Access Systems

Organization Name	Multimedia Personal Computer	Legacy computers With Thin Client software	Handheld Device	Wireless portable Internet device	Thin client Network Appliance	Other
AOL	X	X			X	
bigchalk.com	X		X	X	X	
Brainium	X	X	X	X	X	
Cablevision	X					
Chancery	X					
Classroom Connect	X	X				
Co-nect	X					
EDmin.com	X	X	X	X	X	
Excelsior Software	X	X				
IBM	X					X
iMind	X	X			X	
Intel	X	X	X	X	X	
LearningStation	X	X	X	X	X	
Lightspan	X				X	
Lindy Software	X					
NCS	X	X	X	X	X	
NetSchools	X	X		X	X	
Oz New Media	X	X	X	X	X	
Riverdeep	X	X				
SchoolCity	X	X				
Teacher Universe	X				X	
Teachscape	X	X			X	
Turner Learning	X	X		X	X	
wwwrrr	X			X		
EPIE Institute	X	X		X	X	
MCI WorldCom Foundation	X	X	X	X	X	
Project Achieve	X	X		X	X	
SRI International	X	X			X	
CA Learning Resource Network	X	X		X	X	
Idaho Dept of Ed	X	X	X	X	X	
Illinois State Board of Ed	X			X		
Iowa Dept of Ed	X		X			
Kansas State Dept of Ed	X	X				
Maine Dept of Ed						
Maryland Dept of Ed	X	X	X	X	X	
Minnesota Dept of Ed						
Missouri Dept. of Ed	X	X	X	X		
Nevada Dept of Ed	X					
New York Office of Teaching	X	X				

Organization Name	Multimedia Personal Computer	Legacy computers With Thin Client software	Handheld Device	Wireless portable Internet device	Thin client Network Appliance	Other
NH Dept of Ed	X					
NM Dept of Ed	X					
NC Dept of Public Instruction	X	X			X	
Oregon Dept of Ed	X		X	X		
Wisconsin Dept of Public Instruction	X					

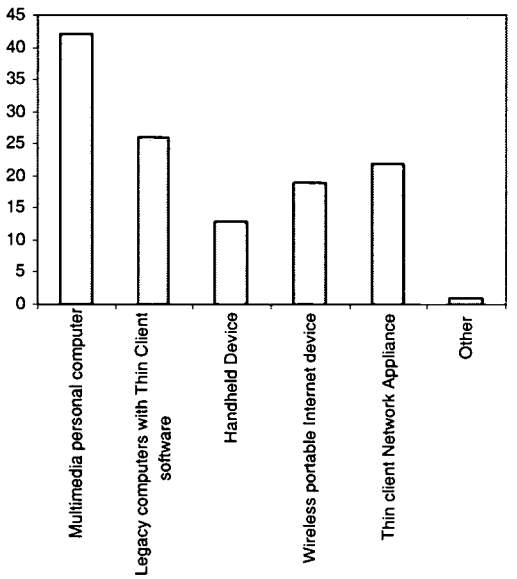
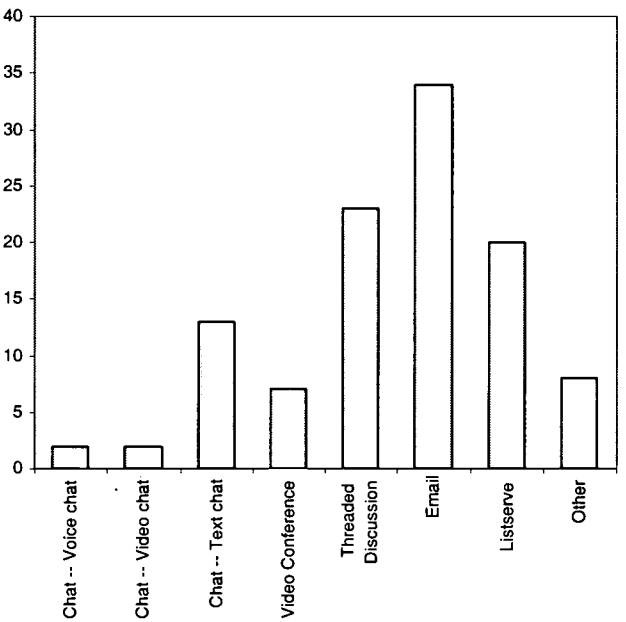


Table 20
On-line Tools Provided

Organization Name	Chat Voice Chat	Chat Video Chat	Chat Text Chat	Video Conference	Threaded Discussion	Email	Listservs	Other
AOL			X			X		X
bigchalk.com			X		X	X		X
Brainium						X		
Cablevision			X		X	X		X
Chancery					X	X	X	
Classroom Connect			X		X		X	
Co-nect						X	X	X
EDmin.com					X	X		
Excelsior Software								
IBM					X			X
iMind						X		
Intel					X	X		
LearningStation						X		
Lightspan			X	X	X	X	X	
Lindy Software								
NCS			X		X	X		
NetSchools			X		X	X	X	
Oz New Media	X	X	X	X	X	X		
Riverdeep					X			
SchoolCity					X	X		
Teacher Universe					X	X		
Teachscape					X		X	
Turner Learning					X		X	
wwwrrr					X	X		X
EPIE Institute	X	X	X	X	X	X	X	
MCI WorldCom Foundation						X	X	
Project Achieve			X	X	X	X		X
SRI International					X	X	X	X
CA Learning Resource Network					X		X	
Idaho Dept of Ed					X	X		
Illinois State Board of Ed			X	X		X	X	
Iowa Dept of Ed			X	X		X	X	
Kansas State Dept of Ed						X	X	
Maine Dept of Ed						X	X	
Maryland Dept of Ed						X		
Minnesota Dept of Ed								

Organization Name	Chat Voice Chat	Chat Video Chat	Chat Text Chat	Video Conference	Threaded Discussion	Email	Listservs	Other
of Ed								
Missouri Dept of Ed			X			X	X	
Nevada Dept of Ed				X		X		
New York Office of Teaching						X		
NH Dept of Ed					X	X	X	
NM Dept of Ed						X	X	
NC Dept of Public Instruction								
Oregon Dept of Ed						X	X	
Wisconsin Dept of Public Instruction						X	X	



Conclusion

State policymakers and education administrators, learning of the number and product offerings of various vendors, might well wish to consider what decisions other states have made with regard to desktop applications for teachers, as well as what future developments might be anticipated. The tables at the end of the state and district activity section provide a cross-referenced summary of vendor offerings.

State and District Activity

ECS conducted an environmental scan of state-level activity on this issue. A summary of the activity in eight states is provided below:

1. Florida. STEPS (http://www.firn.edu/doe/curric/prek12) provides on-line lesson planning tools aligned to Florida's Sunshine State Standards. It includes a Lesson Architect that allows teachers to create lessons, learn about lesson planning, and save work to be edited later. It also includes best practices, on-line expeditions, Web links, a tutorial library, professional development resources and a digest of units and lessons. Florida Information Resource Network – FIRN (http://www.firn.edu) provides every teacher with free e-mail and Internet access. The Florida Department of Education recently improved its downloadable Curriculum Planning Tool, with the addition of new Web-based activities. The state is investigating data warehousing, as well as the creation of an electronic tool box or briefcase that will include lesson plan templates, accessible standards, peer-reviewed lesson plans, other types of tutorials and resources, grade book, attendance, parent access and a teacher recruitment component.

2. Hawaii. The Hawaii Department of Education (http://www.k12.hi.us) purchased a Web-based Integrated Special Education (ISPED) system intended to help identify, track and serve special education students and to reduce the administrative load on teachers. The department estimates the $1.5 million made-to-order system will reduce paperwork by 85%, as well as reduce the high turnover rate of teachers. ISPED will pool information collected over time, reduce duplication and help determine the need for special services. Parents will eventually have access to the system via user name and password.

3. Illinois. The Illinois State Board of Education - ISBE (http://www.isbe.state.il.us) has a number of initiatives related to on-line standards. These include an on-line marketplace for educators to share lesson plans, instructional techniques, assessment prototypes, samples of exemplary student work and teaching materials recommendations. ISBE also has contracted with firms to provide Internet-based services to schools at reduced or no costs to the school in return for licensing agreements. These include products and services by Classroom Connect, Infonautics Corporation, The Lightspan Partnership, NCS's custom Internet curriculum and Educational Structures.

   The Illinois School Improvement - ILSI Web Site (http://www.isbe.state.il.us/sip/default.htm), conjointly developed by ISBE with the North Central Regional Education Laboratory and the Illinois Business Roundtable, is designed to help educators use data-driven decisions in their school improvement process. It also intends to provide easy access to resources and tools, while enhancing communication among educators, parents and the business community. The password-accessible site has four main components: Vision, Analysis, Process and Knowledge. The Web site is expected to be operational by fall 2000.

   ISBE also is working with the Center for Research on Evaluation, Standards, and Student Testing (CRESST) at UCLA to develop Quality School Portfolios, a database similar to the ILSI Web site, which provides disaggregated school data. The state is also working with SRI International on creating a palm tool version of Performance Assessment Links in Science (PALS) that offers performance assessment aligned to math standards.

4. Massachusetts. The Massachusetts Department of Education leads a consortium of districts and state education agencies participating in the development of Virtual Education Space – VES (http://www.doe.mass.edu/edtech/ves/). VES features curriculum alignment, communication/collaboration, assessment and productivity tools for teachers; student workspace for viewing and working on assignments; a parent component for viewing student assignments; and an information management system that will automate data collection, including individual student and staff records. The VES design team is encouraging other states to work with Massachusetts not only

to develop an open set of outcome-based curriculum and instruction standards, but to participate in a multi-state procurement consortium. In March 2000, the department of education issued an RFP for:

- On-line applications, communications and collaboration tools, and systems integration services
- Edge device hardware
- ASP hosting services
- E-commerce services.

The state intends to provide incentives for participation. It has established a goal of 50% of teachers in the state participating by spring 2002 and 50% of students participating by spring 2003.

A key component of VES is the Curriculum Library Alignment and Sharing On-line (CLASP). CLASP On-line is a grassroots solution that "filtered up" to the state level. It started as a curriculum database developed by the North Andover school system and evolved into a software tool for inter- and intra-district discussions for curriculum guideline sequencing, sharing model lesson plans and sharing resources. The tool helps districts develop learning objectives for each grade and subject beyond the interval testing mandated by the state. By collaborating with other districts and teachers, goals are reached quicker and peer feedback strengthens lesson plans and curriculum guidelines. CLASP is now seen as a model for other state districts seeking to engage teachers in a standards-driven approach to classroom practices.

VES builds on the successes of CLASP, QuickTime, and the Virtual High School as prototypes. It is made possible by a single source of reliable individual student and teacher data from the Department's Information Management System (IMS).

5. Minnesota. The Minnesota Electronic Curriculum Repository - MERC (http://mecr.state.mn.us/) is a database of curriculum materials that support the state's standards. It contains the state model performance assessments, as well as assessment tasks, scoring criteria, learning activities and learning resources gathered from educators across the state. (An editable version is forthcoming.) The Department of Children, Families and Learning operates the Minnesota Staff Development and Best Practice's Web site, which offers research expertise and collaboration in six subject areas.
6. Pennsylvania. PSSA Classroom Connections (http://www.pde.psu.edu/connections/) aligns standards, curriculum, instruction and assessment on a CD-ROM to help teachers and students prepare for the state assessment. Curriculum materials and professional development opportunities are included in the resources.
7. Vermont. Standards Into Action - SIS (http://www.standards.ed.state.vt.us) is a system of Web-based tools for Vermont educators, including an instructional planning and assessment management tool and a teacher forum for sharing lessons and resources. The resources are aligned with state academic standards. The assessment tool is able to record assessment results, allowing teachers to analyze them and adjust curricula if necessary to bring student work up to state standards. The system was developed in partnership with IBM Reinventing Education.
8. Washington. The Washington State Learning Improvement Support – WSLIS project gives teachers, parents and school administrators specific diagnostic data to drive curricular planning, instruction and assistance. State leaders are partnering with Massachusetts' VES team to bring the VES concept to fruition in Washington. Washington Virtual Education Space (WAVES) will offer tools, services and resources to enable standards-led, data-driven teaching and learning. Student data, instructional resources, assessment data, professional development resources, financial data, program data and more are integrated for data-driven decisionmaking and learning improvement. The state undertook this project in an effort to coordinate and pool the knowledge and resources of school districts interested in pursuing LIS-type systems individually. Washington and Oregon offer Learning Space (http://www.learningspace.org) that provides curriculum aligned with state standards.

The following two tables provide a comparison of select state smart desktop applications.

Table 21
Smart Desktops – State Examples

	Illinois*	Minnesota**	Vermont***
Standards Database (a cornerstone)			
Local/District	Yes	Editable version pending	Yes
State		Yes	
National			
Instructional Support (a cornerstone)	Via Classroom Connect, Lightspan, Educational Structures		Instructional Planner Standards-based units link to resources and activities
Integrated Curriculum Strategies		Yes	
Learning Activities			Yes
Lesson Plan Database/Templates			Yes
Focused Tutoring/Assignment Mgmt.		Yes	
Research Database			
Assessment (a cornerstone)			
Creating Assessments			Teacher-created rubrics
Scoring Training/Guides	Scoring explanations	Yes	
Exemplary Student Work			Database for scoring practice, comparisons
Assessment Reports and Analysis	Analyses of student work On-line	Yes	
Curriculum-Embedded Assessment.		Yes	
Stand-Alone Tests (state, entrance)			
Monitoring Progress			
On-line Assessment			Student rosters and reports
Professional Development (a cornerstone)	On-line marketplace for educators; community of experts		
On-line Course		Yes	
Email		Yes	
Web Collaboration		Yes	Threaded discussions
Face-to-Face			
Video/Quick Time			
Access and Reporting Levels		MECR is for educators, but is accessible to all	
Teachers	Yes		Yes
School/District officials	Yes		
Students			Private On-line conferences between parents/student/ teachers
Parents	Yes		
Community Members	Yes		Yes
Preservice Teachers			
Teacher Educators			

	Illinois*	Minnesota**	Vermont***
Data Collection and Analysis	Comparative data is available for other schools, district and state		
Data Analysis			Yes
Data Mining/Data Warehousing			Pending
Performance Comparisons			
Web-posted Progress Reports			
Web-based Delivery	Both		
Education Service Providers			
District- or State-Operated Systems			
System Implementation			
Training and Professional Development			Yes
Train the Trainer			Yes
Self-Paced Tutorial			
Face-to-Face		Yes	
Technical Support			
Teacher Productivity Tools			
Assessment Reports/Test Scores			Yes
Electronic Gradebook/Attendance		Yes	
Electronic Report Card			
Calendar			Home page designer
Syllabus Creator			

*The Illinois School Improvement (ILSI) Web site combines data collection with analysis and resources.
**Minnesota includes the Minnesota Electronic Curriculum Resources and the Best Practice Networks.
***Vermont's Standards Into Action was developed in partnership with IBM's Reinventing Education.

Anticipated Future Developments

Interest in Smart Desktops for teachers is in the early stages. The education technology emphasis has, for years, focused on getting computers in the hands of students. Now the emphasis is shifting toward the ways in which information may be used to diagnose and prescribe learning solutions. As learning resources and opportunities become more readily available to students, parents and other community members, the following changes may be expected over the next few years:

- Educators will become more sophisticated consumers of technology and educational resources.
- More states will train teachers to evaluate student performance against calibrated standards and to assess portfolios of student work.
- More districts and states will opt to use Application Software Providers (ASPs) or, more specifically, Education Software Providers (EduSPs) to run software, provide technical supported store and maintain data.
- Curriculum units and lesson plans will be shared across states with similar standards, causing a de facto national curriculum to surface.
- The proliferation of Web-based resources will likely lead to an increase in the number of home-schooled students, leaving districts and states to re-think the appropriation of education funding.
- For-profit companies and consortiums of nonprofit organizations will compete, merge and, where advantageous, partner in pursuit of a share of the all-in-one integrated solution for education accountability.
- The education technology field will eventually consolidate to a handful of powerful education content, software and service providers offering integrated solutions.

Summary

The convergence of several trends will change the way teachers teach and students learn. These trends include:

- The need to align teaching practices with state standards and testing.
- The widespread and relatively inexpensive use of the Internet.
- The emergence of information management systems that allow student progress to be monitored and that facilitate communication between teachers, students and family.
- The education market's attractiveness to software, content and hardware providers.

Thoughtful implementation of Smart Desktop solutions, and careful consideration of policy and funding issues, can result in benefits to students and teachers alike.

Table 22
Smart Desktops – Vendor Examples

	EDmin*	Lightspan†	NCS§
Standards Database (a cornerstone)			
Local/District	Yes	Optional	Optional
State	Yes	Yes	Yes
National			Yes
Instructional Support (a cornerstone)	Capability		
Integrated Curriculum Strategies		Yes	Yes
Learning Activities	Yes	Yes	Yes
Lesson Plan Database/Templates	Yes	Yes	Yes
Focused Tutoring/Assignment Mgmt.		Yes	Yes

	EDmin*	Lightspan†	NCSº
Research Database			
Assessment (a cornerstone)			
Creating Assessments	Yes	Yes	Yes
Scoring Training/Guides		Yes	Yes
Exemplary Student Work	Yes		
Assessment Reports and Analysis	Yes	Yes	
Curriculum-Embedded Assessment	Yes	Yes	Yes
Stand-Alone Tests (state, entrance)	Yes	Yes	Yes
Monitoring Progress	Yes	Yes (district level)	Yes
On-line Assessment	Yes	Yes	
Professional Development (a cornerstone)			
On-line Course		On-line resources	
Email	Yes	Yes	Yes
Web Collaboration	Yes	Yes	Yes
Face-to-Face		Yes	Yes
Video/Quick Time		Pending	
Access and Reporting Levels	All	All	
Teachers			Yes
School/District officials			Yes
Students			Yes
Parents			Yes
Community Members			
Data Collection and Analysis		Interprets district/state data for decisionmaking	
Data Analysis	Yes		Yes
Data Mining/Data Warehousing	Yes		Yes
Performance Comparisons	Yes		
Student Skill Inventory/Portfolios			Yes
Web-Posted Progress Reports	Yes		Yes
Web-Based Delivery			Both
Education Service Providers	Yes, will host system.		
District- or State-Operated Systems			
System Implementation	Helps announce, schedule and enroll educators in training events. Develops professional development portfolio.	Toll-free phone line	Yes, via workshops, on-line help and strong technical support.
Training and Professional Development			
Train the Trainer			
Self-Paced Tutorial			
Face-to-Face			
Technical Support			
Teacher Productivity Tools			
Assessment Reports/Test Scores	Yes		Yes
Electronic Gradebook/Attendance	Yes		Yes
Electronic Report Card	Yes		
Calendar	Yes	Yes	
Syllabus Creator		Yes	

* EDmin refers to the company's Virtual Education System.
† Lightspan refers to the company's Achieve Now, The Lightspan Network and its education portal.
º NCS refers to its suite of product lines including SASI, Abacus, Educational Structures, InteGrade Pro, ParentConnect and MCAD (Model Curriculum and Assessment Database).

Scenarios

Mrs. Chavez Teaches Algebra

It's early July, and Mrs. Chavez is preparing for the next school year. She logs onto her school's education portal and taps into the database. The teacher workspace pops up on the screen, displaying the courses she teaches. This allows Mrs. Chavez the opportunity to view courses in more detail, including various curriculum objectives established, lesson plans she has prepared or adapted, course syllabi developed, and a link to a discussion group for high school math teachers offered to colleagues.

Mrs. Chavez, wishing to plan for her upcoming Algebra II class, wants to learn about her incoming students' achievement levels in Algebra I. She clicks on the productivity tools icon and drags the aggregated end-of-the-year testing results for her first period Algebra II class onto her teacher workspace. A pie chart appears. Specific standards also appear as pop-up windows, as she moves the mouse over sections of the pie chart. Mrs. Chavez settles on the Algebra I standard:

Use formulas and graphs to solve problems involving exponential functions.

Solve a problem by:

a. Locating points on the graph.
b. Evaluating an exponential expression.

Mrs. Chavez learns from the accompanying data that only 62% of her incoming Algebra II class mastered 3.12.b.

Mrs. Chavez, using her teacher notepad from the toolbox, notes the low student performance for this outcome. She then cross-references for those students who did not meet the standard. A list appears. She drags the list to her teacher's student database. She repeats this process for each Algebra I standard.

Mrs. Chavez then merges the database with parent e-mail addresses to inform parents via e-mail (individual privacy protection is in place) their child did not master some of the Algebra I standards. She provides the URL for the prescriptive on-line tutoring program that students can use over the course of the summer to prepare for Algebra II. She also informs the parents that the District On-line Tutoring Facilitator will be checking on the students' progress during the next few months, with progress reports posted back to the parent.

At the beginning of the school year, Mrs. Chavez will be able to determine how the students improved. She also will be able, using a quick assessment tool, to identify those students in need of additional remedial assignments for specific content areas. She then will be able to search the state's lesson plan database for remedial and advanced assignments for each curriculum unit, both for these students and those who are ready for more challenging assignments.

Students will be able to find their customized assignments and links to on-line resources, simply by logging onto their workspace. This allows them to work on assignments at school and at home, each time saving their work and returning where they left off. Moreover, it allows parents and teachers to check the student's progress and, if necessary, seek additional assistance at any time. Mrs. Chavez can, for example, compare her student's work to examples of excellent student work posted by other teachers whenever a student submits an assignment.

Mr. Brady Uses Brain-based Learning, Professional Development Videos, Juried Lesson Plans and More

Mr. Brady feels he isn't reaching his fourth period, 7th-grade social studies students the way he should. Acting out in the classroom, the students are not grasping the concepts. Fortunately, it being early in the year, Mr. Brady knows he can use his Smart Desktop in ways that can reach them.

Mr. Brady launches his Smart Desktop, selects productivity tools, and drags the "Learning Styles Inventory" results for his fourth period students to his teacher workspace. The chart tells him want he needs to know: 40% of his students are tactile or kinesthetic learners. Mr. Brady opens the Professional Development component, wishing a refresher course on the best instructional strategies to use with such learners. He selects "Brain-based: Tactile/Kinesthetic" from the list. He then clicks on the video summarizing the best approaches to learn that project-based learning is one strategy.

Mr. Brady accesses detailed information in preparing for and implementing project-based learning. Video vignettes provide examples of actual classrooms where project-based learning is taking place. Teachers share classroom management tips and techniques, assignment preparation pointers, methods for tracking student group progress, and criteria for assessing performance-based learning. He also e-mails the e-mentor on the subject.

Mr. Brady decides to use project-based learning in the next topic of the study: Africa. Dragging the standards component on the teacher workspace, he begins with the standard:

The learner will locate major physical features and suggest the influence of their location on life in Africa and Asia:

3.1 Describe the absolute and relative location of major landforms, bodies of water, and natural resources within Africa and Asia.

3.2 Analyze the impact of the absolute and relative location of places within Africa and Asia.

He drags the Resource component and drops it on standard 3.1. Resources align to meet the standard, which appears on the Teacher Desktop. These resources include videos, printed resources, Web sites, e-experts and juried lesson/unit plans. Moreover, each category of resources is linked to a Web page containing further information.

Mr. Brady searches for juried lesson and unit plans, quickly finding one he likes. He decides to incorporate it into his larger project-based learning approach. He orders videos, locates prepared Internet activities on Africa, and e-mails a professor of geography at the University of Alexandria for a possible video conference with his students.

Mr. Brady continues building his project-based learning unit on Africa to include the other eleven competency goals. He decides to approach the project in smaller "chunks," allowing him first to complete a half-semester study of Africa before transitioning to a project on Asia in order to meet the remainder of the state's learner outcomes. Mr. Brady, using this new approach to teaching, actually looks forward to the project ahead. Though he feels a little nervous, Mr. Brady now knows that he has colleagues and the resources to support him.

Mr. Brady, before ending his search for the day, e-mails a Cyber-Classroom E-mail Exchange Clearinghouse to set-up an exchange between his students and African students. He looks forward to reviewing the Learning Activities & Teaching Strategies component tomorrow, which include digital presentations students can use for their project. He'll also delve into the Assessment Component, learning how to track student progress on their digital projects via the Web. Finally, Mr. Brady reviews the list of tactile and kinesthetic strategies once again. He decides to involve students in more active learning exercise tomorrow, by having groups research their topic using a Web-based scavenger hunt instead of listening to him talk about it.

Mr. Brady is excited. He can't help but think of the possibilities of the project-based learning project he's planning, particularly given the learning standard on art forms and aesthetic values in African societies that can be included. He thinks to himself:

"Perhaps I can use that CD on ancient African masks and celebrations. Wow, I bet the kids will love incorporating music in their digital project. They can use photographs of African art found on the Web, linking it to the works of African poets and to museums. They could even include digital photos of clay maps they create representing Africa's major physical features. They might even write their own poetry, using their own voice recording of it. I'll have to hop back on the Smart Desktop at home and see what I can find."

Appendix A

List of Surveyed Vendors

The Education Commission of the States issued a Request for Information (RFI) in June 2000 in order to gauge the level and types of activity in the area of providing "smart desktop" applications for teachers. The RFI was issued to chief state school officers in the United States and organizations (both for profit and not-for-profit, identified by the team preparing this study) that provide smart desktop products and services. Being asked to participate in the RFI does not represent an endorsement on the part of ECS, nor does omission from this sample necessarily indicate any lack of quality on the part of providers. A more exhaustive survey of the field is recommended for the future.

Forty-four respondents completed the on-line survey. The respondents are divided into three categories: states (16 responses), vendors (25 responses) and nonprofits (3 responses). The following information provides briefs on the various for profit and nonprofit vendors surveyed by ECS:

For Profit

1. America On-line, Inc. (AOL) (www.aol@school.com). AOL offers free Internet service for students and educators, through which all content and resources can be accessed, called AOL@SCHOOL. The six portals are organized by grade level for students in primary, elementary, middle and high school. Separate portals are available for teachers and administrators. Schools can order and install the free AOL@SCHOOL software on their computers to receive free e-mail, content filtering and local account management. AOL@SCHOOL is considered a "bring your own access" service that can be used with any existing Internet connection, as most schools already have Internet connections provided by local service providers with help from local, state and federal government programs. At the discretion of school officials, students also may make use of e-mail, instant messaging and chat capabilities.
2. bigchalk.com. Bigchalk.com is an education destination for parents, teachers and students. It provides content, curriculum and community resources. It also allows access to ELibrary, Proquest, Homeworkcentral.com and MediaSeek's Explorasource. It also provides stakeholders with a way of localizing this Web content and the tools to support Web-based, community publishing.
3. Brainium.com. Brainium.com creates curriculum-based, on-line learning environments for grades K-12. It provides full professional support and resources for teachers and personalized multimedia to engage individual students and accountably deliver learning objectives.
4. Cablevision Systems Corporation (www.powertolearn.com). Cablevision's "Power To Learn" is an education initiative designed to enable teachers, students and parents to leverage the power of the Internet in a commercial-free environment. Cablevision developed "Power To Learn" specifically for the New York metropolitan area. It offers high-speed Internet access to schools and libraries, provides an on-line learning community, and trains teachers to integrate the Internet into their classrooms.
5. Chancery Software Ltd. Chancery Software, founded in 1983, provides Windows, Macintosh and Web-based information management systems for grades K-12 education. Information on more than 10 million students is now managed by nearly 600,000 educators using Chancery's Win School and Mac School student information systems, Grade Machine and eClass teacher tools, Library Pro library automation, Open District enterprise systems and K12Planet.com.
6. Classroom Connect. Classroom Connect develops Web-based curriculum products and professional development programs for educators. Classroom Today offers innovative science, social studies, language arts and math topics related to required curriculum and matched to state and national standards. Connected University provides on-line professional development courses for educators, enabling them to enhance their teaching and learning skills. Quest Interactive Expeditions feature on-line learning adventures and standards-reinforcing activities that allow students to become virtual explorers. In addition, Classroom Connect offers award-winning curriculum materials, enrichment units, curriculum guides, and primary source materials to facilitate teaching and learning in the connected environment.
7. Co-nect. Co-nect works with schools to develop a sustainable, standards-based approach to teaching and learning that is supported through a combination of on-site, on-line and off-site resources.

8. EDmin.com, Inc. EDmin.com's proprietary Internet software applications promote a connected learning community. Parents, teachers, students and administrators share access to the Edmin.com Web portal. The current product line includes:

   - Virtual EDucation System helps educators address their community's concerns about school and district accountability by comparing actual student, class, grade, school and district performance on a "real-time" basis. Teachers are able to use data to drive instruction and improve learning opportunities for students.
   - TechBuilder is a Web portal that supports a national dialog on using technology to improve learning opportunities for students.
   - System Integration Services (SIS) designs, builds and operates the technological infrastructures used by districts and schools.

   Products currently in development include: a personal information device (PID), which would incorporate the use of PID software with EDmin Web-based products; and FamilyVista, which would focus on the individual and family to promote communication, collaboration and continuous improvement among family members so they might participate in life-long learning.

9. Excelsior Software, Inc. Excelsior Software provides "Real-time Electronic Gradebook" and "Gradebook Management for Teachers." It also provides "real-time" student assessment and progress information.

10. IBM Corporation. IBM established "Reinventing Education" as a means to develop new applications of technology that address priority challenges in K-12 education and promote student achievement. It has developed, as a result of almost 30 grant partnerships, a suite of offerings that are teacher designed and tested. The objective of the IBM Learning Village offering is to:

    - Enable teachers to easily create and use lesson plans, resources, activities, etc., that are mapped to local, state and federal standards.
    - Enable teachers, parents and students to communicate and collaborate to enhance the educational process.
    - Enable teachers, parents and students to assess student work consistently against that highest standards.
    - Enable administrators and school leaders to provide a framework for professional development and instructional leadership that focuses on student achievement.

11. iMind Education Systems. iMind Education Systems develops and sells Internet-based education solutions that support student achievement, teacher effectiveness, administrative accountability and parent involvement. iMind offers a solution that integrates the four pillars of K-12 school technology: digital content, hardware, connectivity and instructional management tools across multiple generations of Macintosh and Windows computers. iMind includes three integrated solutions: iMind Integrator, iMind TutorPro and iMind Internet Hubs.

12. Intel Corporation. The Intel Education Destination is a resource for teachers and school technologists interested in enhancing education through the use of technology. A key focus of the site is improving the integration of technology in K-12 classrooms. Sponsored by Intel Corporation as part of the Intel Innovation in Education effort, the Intel Education Destination is noncommercial and includes no advertising, products or services for sale.

13. LearningStation.com. The LearningStation.com attempts to provide the most cost-effective technology solution for academic achievement.

14. Lightspan, Inc. Lightspan provides curriculum-based educational software and Internet products and services, for use both in school and at home. Its technology, delivery systems and content helps to increase student interest in learning, parental involvement in their children's education, and productive interaction among teachers, parents and students. Lightspan Achieve Now, a product for students in grades K-8, is a series of media-rich, interactive software programs that cover core school curriculum (i.e., language arts, reading and math). It is sold exclusively to schools and school districts for use in both the classroom and at home. Lightspan also offers the following integrated family of Internet products and services through its Web site: Lightspan.com: The Lightspan Network; Lightspan PageOne; Global Schoolhouse; StudyWeb; and The Lightspan Learning Store.

15. Lindy Software. Lindy Software provides curriculum-based assessment software.

16. NCS. NCS is a global information services company providing software, services and systems for the collection, management and interpretation of data. NCS serves important segments of the education, testing, assessment and complex data management markets.

17. NetSchools Corporation. NetSchools.com seeks to assist schools improve education and meet the demands of accountability legislation through common access to resources organized in age-appropriate smart desktops in accordance with user access and privileges. It provides every teacher and administrator, every student and every family with equitable access to on-line resources and tools specifically designed to enable everyone to participate in learning communities, which are dedicated to improving student performance. Features include Specific State Standards correlated to a growing Internet database of over 30,000 reviewed and rated educational Web sites. Teachers have collaborative lesson planning tools, which will allow them not only to find and assign standards and resources from the database but also to save and archive lesson plans for use among schools and districts. All members (teachers, parents, students and administrators) receive community tools, such as the NetSchools Library (200,000 Web sites organized for student research), interactive community calendars, e-mail and on-line discussion groups. Services such as professional consulting and on-line training provide support to educators and administrators.

18. Oz New Media Inc. Oz New Media is the resource development and production component of the "Education On-Line" (EOL) family of companies. Its objective is to develop and deploy, via the Internet, the following:

    - Comprehensive state standards-specific on-line resources for students and teachers
    - A new class of Web-based tools and services for teachers and students
    - Meaningful collaboration between teachers and parents, homes and schools.

19. Riverdeep Interactive Learning. Riverdeep designs, develops, publishes, markets and supports interactive learning solutions for K-12 education that integrate the best in curriculum with the power and flexibility of the Internet.

20. SchoolCity.com. SchoolCity's goal is to provide useful Web-based products and services that help increase student achievement.

21. Teacher Universe. Teacher Universe creates technology-rich solutions for improving the quality of life and work for teachers worldwide. These solutions engage both teachers and students in collaboration, research, inquiry and expressive activities that enhance student achievement and teacher satisfaction. Teacher Universe provides instructional technology planning, professional development, instructional tools, yearlong curricula, and career and life services through a variety of programs, including TeacherUniverse.com and Galaxy.org,

22. Teachscape. Teachscape provides a comprehensive learning network for K-12 teacher professional development that includes Internet-based multimedia case studies and courses, on-site school support services, a Web-based improvement community, and diagnostic assessment. Teachscape's system provides opportunities for teachers to become active participants in an on-line community of educators improving their practice through video-based interactive courses delivered on-line, peer-to-peer discussions, on-line mentoring, and on-site professional development support.

23. Turner Learning. Turner Learning offers student and teacher cable, and Web news and information, products from CNN. Educational programs also are available from TNT, Turner Classic Movies and Cartoon Network for teachers and students. All programs are free and commercial free.

24. wwwrrr, Inc.. Wwwrrr, Inc. is an on-line education and training company that provides Internet communication, training and learning products to equip teachers, students and parents with the necessary tools to build a communication infrastructure between the school and home, to build a foundation of understanding about the Internet, and to experience learning via the Internet. Company products serve the educational community through a three-pronged strategy: provide on-line training to assist educators in their understanding of the Internet and its successful integration into the classroom; offer a communication product to facilitate on-line dialog and communication between parents, teachers and students; and deliver curriculum products for student use at school and home.

Nonprofit

1. EPIE Institute. The mission of the EPIE Institute is to provide unique, democratized, Web-based learning and mentoring activities for learners, mentors, and teachers. Learners are able to co-produce learning resources via the "Student Factory," with mentoring from subject experts. Students also are able to engage in on-line, cross-age, peer tutoring. Students' out-of-school learning time and activities are recorded in a Personal eLearning Journal. Learners receive Bonus Credits for completing an on-line evaluation of each learning resource they use within eLearningspace (immediately after using the resource). Teachers contribute to eLearningspace by creating eLearningspace's on-line, standards-aligned, student learning plans. This provides teachers with a user-friendly set of tools for evaluating, aligning and integrating technology resources into the curriculum. Individual schools, school districts and states aggregate teacher input of resource evaluations and alignments.

2. MCI WorldCom Foundation. MarcoPolo is a partnership between the MCI WorldCom Foundation and seven leading educational organizations that has yielded high-quality, standards-based Internet Content for the Classroom, accessible through six discipline-specific educational Web sites. MarcoPolo is the name of this overall partnership and the site from which to access: ArtsEdge, which focuses on The Arts in partnership with The John F. Kennedy Center for the Performing Arts; EconEdLink, which provides content in Economics in partnership with the National Council on Economic Education; Xpeditions, which explores Geography in partnership with the National Geographic Society; EDSITEment, which focuses on The Humanities in partnership with the National Endowment for the Humanities and the Council of the Great City Schools; Illuminations, which centers on Mathematics in partnership with the National Council of Teachers of Mathematics; and Science NetLinks, which offers Science content in partnership with the American Association for the Advancement of Science.

   Teachers find original materials and a wealth of information on the MarcoPolo and partner Web sites, including dynamic lesson plans both discipline-specific and cross-disciplinary; links to educational sites approved by panels of experts; educational material sorted by grade; curricula based on national standards; educational resources specific to each site; and a search engine that searches all sites by many variables. The MarcoPolo program is built on the results of educator surveys and focus groups, which are made publicly available. MCI WorldCom Foundation trains the teacher trainers, who in turn train teachers in or near their district. On-line resources include panel-reviewed links to top sites in many disciplines, professionally developed lesson plans and classroom activities. Sites include materials to help with daily classroom planning, brief and extended lesson plans, reviewed and expert-approved links to related high-quality sites and powerful search engines.

3. Project Achieve. Project Achieve provides Canadian learners and their friends from around the world with collaborative, object-oriented, virtual learning environment experiences. It provides students with the opportunity to build representations of people, places and things in virtual reality spaces and share them with others through project-based learning and creative problem-solving models.

4. SRI International. SRI provides research and development in the areas of Science, Technology, and Policy Research and Development.

Appendix B

ECS Web Survey

Education Commission of the States

Smart Desktops for Teachers

Request for Information

Please provide information about your organization's online or web-based product(s). Because Internet services are in a constant state of improvement, please base your response on the state of your service offerings as of August 2000. Feel free to respond "not applicable" if the resource or service described is not a part of what your organization is currently offering.

1. Organizational Information. Please select the category that would best describe your organization.

State government
Public school district
Private school
Nonprofit
For profit

2. Contact Information. Please provide the following information:

Contact name
Contact email
Contact phone

2a. Contact Address.

5. Organization Information.

Organization name
Organization Web site
Product name

3a. Organization Address. (if different from Contact Address)

4. Organization Objective. Please state in 500 words or less the goal and objective of the organization's service offerings:

5. Online Offerings. Which of the following would best describe your online offering? Check all that apply.

Education Portal
Online Courses/Staff Development Classes
State Correlated Curriculum
Lesson Plans Bank
Juried Lesson Plan Bank
Traditional Assessment (e.g., multiple choice test)
Performance-based Assessment (e.g., portfolios)
Student Instructional Software
Student Information Systems
Pre-test/Post-test on Student Skill Level
Prescriptive Tutoring
Professional Development beyond Software Orientation
Educational Resource Links – Web Sites
Educational Resource Links – Other Media (Books, Videos, in-print reference materials)

6. Target Audiences. Please indicate your organization's target audiences. Check all that apply.

- Classroom Teachers
- Support Personnel
- Campus Administrators
- District Administrators
- School Board Members
- Parents
- Students
- Community Members
- Preservice Teachers
- Teacher Educators
- Other

6a. If you checked "Other," please elaborate.

7. Curriculum Standards Database. Please indicate which of the following databases are integrated as a part of your instructional strategies system

- Local/district database(s)
- State database(s)
- National database(s)
- International database(s)
- Not applicable

7a. If you use State databases, please indicate which state(s):

7b. If you use National databases, please identify them:

7c. If you use International databases, please identify them:

8. Teaching Standards Database. Which of the following databases are integrated in your offerings? Check all that apply.

- National Board of Professional Teaching Standards
- NCATE Standards
- ISTE Technology Standards
- State Technology Standards
- Other
- Not Applicable

8a. If you checked State Technology Standards above, please identify:

8b. If you checked "Other," please elaborate.

9. Instructional Support. Which of the following instructional support resources are a part of your system? Please check all that apply.

- Learning Activities
- Pedagogy Support
- Lesson Plan Database/Templates
- Juried Lesson Plan Database/Templates
- Prescriptive Tutoring
- Assignment Management/Monitoring
- Web-based Instructional Software
- Not Applicable

10. Assessment – Students. Which of the following assessment strategies are a part of your system? Check all that apply.

- Assessment of web-based instructional software
- Student Portfolios – Web-based portfolios
- Student Portfolios – Print portfolios
- Student Portfolios – Combination of printed and web-base portfolios
- Online Journals
- Exemplary Student Work
- Assessment Reports and Analysis – Curriculum-embedded assessment

Assessment Reports and Analysis – Stand alone test (state, entrance)
Monitoring Student Progress
Other
Not Applicable

10a. If you checked "Other," please elaborate.

11. Assessment – Educators. Which of the following assessment strategies are a part of your system? Check all that apply.

Assessment using technology system
Online Journals
Peer Review of work
Assessment based on National Professional Standards
Course-embedded assessment
Video case embedded assessment
End-of-course assessment
Other

11a. If you checked "Other," please elaborate.

12. Professional Development. What is the Professional Development focus of your offerings? Check all that apply.

Training on the use of your system
Technology Integration for Educators
Classroom Management Strategies
Mathematics
English/Language Arts
Special Education
English Language Learners
Science
Social Studies
Other

12a. If you checked "Other," please elaborate.

13. If Professional Development is provided as a part of your service offerings, what is your organization's approach to Professional Development? Check all that apply.

Online Courses – Courses for Graduate Credit
Online Courses – Just in Time or Job-Embedded Classes
On site (Face-to-Face) Professional Development
Video Case Studies – Web based
Video Case Studies – CD-Rom Delivered
Video-based Instruction
Systemic Professional Development
Online Professional Development

14. Access and Reporting Levels. Which of the following categories have access to various levels of online information and reports? Check all that apply.

Teachers
School/District Officials
Students
Parents
Community Members
Preservice Educators
Teacher Educators
Other
Not Applicable

14a. If you checked "Other," please elaborate.

Data Collection and Analysis.

Which of the following data reports are available through the service? Check all that apply.

15a. Data Analysis

State data
Local data
National Comparisons
International Comparisons
Other
Not Applicable

15b. If you checked "Other," please elaborate.

15c. Data Mining/Warehousing Link

Integration within state/local data warehouse
Not Applicable

15d. Performance Comparisons

Local data
State data
National data
International data
Not Applicable

15e. Web-posted Progress Reports

Teachers
Parents
School officials
Students
Community members
Other

15f. If you checked "Other," please elaborate.

15. [For public institutions only] **Web-based Delivery.** Please indicate whether or not the following services are out-sourced as a part of the education service provider offering or are they mostly provided by district or state operated systems

	Education Service Provided	State Provided
Standards Database		
Instructional Support		
Assessment Tools		
Professional Development		
Data Collection and Analysis		
Online Communication Tools		

Implementation. Please indicate the most frequently used means of getting teachers to know and use your system. Check all that apply.

17a. Training and Professional Development

Train the trainer
Self-paced Tutorial
Face to Face
Online Resources and FAQs
Other
Not Applicable

17b. If you checked "Other," please elaborate.

17c. Technical Support

On-site technical personnel
Online Web support – FAQs
Online Web support – Discussion Boards
Online Web support – ListServs
Technical Support Helpdesk – 800 phone support
Technical Support Helpdesk – Toll phone support
Other

17d. If you checked "Other," please elaborate.

18. Implementation Challenges. Please indicate implementation challenges you've identified:

Processor Speed
Operating System Requirements
Memory Requirements
Bandwidth
Computer Access
Internet Access
Troubleshooting
Data Analysis

19. In addition to the items identified above, which of these other implementation issues top your agenda?

System capacity
Personnel
Staff time
Other

19b. If you checked "Other," please elaborate.

20. Teacher Productivity and Tools. Please select the productivity tools used by your system.

Assessment Reports/Test Scores
Electronic Gradebooks/Attendance

Electronic Report Card
Calendar
Syllabus Creator
Other
Not Applicable

20b. If you checked "Other," please elaborate.

21. Pricing Model. Please indicate the pricing model used by your system.

Free, no advertising
Free, advertising permitted
Individual Educator Subscription
Parent Subscription
Student Subscription
District/Campus License
Combination of Parent & District Subscription
Basic Service
Value-Added Service
Other
Not Applicable

21b. If you checked "Other," please elaborate.

22. Hardware Type. Please select the types of hardware that can be used to access your system:

Multimedia personal computer
Legacy computers with Thin Client software
Handheld Device
Wireless portable Internet device
Thin client Network Appliance
Other

23. Online Tools. Please select the online tools that are a part of your system:

Chat – Voice chat
Chat – Video chat
Chat – Text chat
Video Conference
Threaded Discussion
Email
Listserve
Other

23a. If you checked "Other," please elaborate.

24. Some organizations may offer CD-ROM to supplement the Web-based offerings for those educators who lack high-speed Internet access. Please indicate in the space provided web-based products/services that are also available on CD-ROMs:

25. Additional Comments (up to 100 words):

Thank you for taking the time to complete this survey. Select Submit Survey now to send your responses to us.

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